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An investigation into the
relationship between mental
abilities, reading abilities and
knowledge of some basic concepts
in social studies

Thesis
1950
#53

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THE UNIVERSITY OF ALBERTA

AN INVESTIGATION INTO THE RELATIONSHIP BETWEEN MENTAL
ABILITIES, READING ABILITIES AND KNOWLEDGE OF
SOME BASIC CONCEPTS IN SOCIAL STUDIES

A DISSERTATION
SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF EDUCATION

FACULTY OF EDUCATION

BY

JAMES MUNN CRAIG

EDMONTON, ALBERTA

OCTOBER 1950

Thesis
1950
#58

University of Alberta
Faculty of Education

The undersigned hereby certify that they have read and recommend to the School of Graduate Studies for acceptance, a thesis entitled "An Investigation into the Relationship Between Mental Abilities, Reading Abilities and Knowledge of Some Basic Concepts in Social Studies" submitted by James Munn Craig, B.Ed., in partial fulfilment of the requirements for the degree of Master of Education.

Professor

Professor

Professor

Date *September 20, 1950*

ACKNOWLEDGEMENTS

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CHAPTER I

A DISCUSSION OF THE PROBLEM

1. The History of the Problem

As a result of recent social and educational developments there is an urgent need for more critical interpretation and more intelligent adjustment to all one hears, sees, and reads than has usually been required in the past. This study is an investigation into the relationship between mental abilities, reading abilities and knowledge of some of the basic concepts in social studies. But there is nothing new in the thesis that intelligent social living depends to a large extent on reading. Due to the Protestant Reformation, individual responsibility was substituted for that of the priesthood and the authority of the Bible replaced that of the Church. Thus arose the need to read the Bible on the part of the individual, and this need hastened the development of vernacular languages and necessitated elementary schools to provide instruction in reading. Three centuries ago the colonial children on this continent were sent to school to learn to read the Bible as preparation for worthy membership in a society dominated by religion. The passage of time brought wars and revolutions, enlightenment and social betterment. The revolutions in France and America particularly, were accompanied by notable changes in education. Even so, today, we are still turning to the printed page as the best means of providing democracy with an intelligent citizenry, one that is informed about national and

international affairs, one that is capable of acting with understanding and restraint. Multitudinous problems of social, economic, political, and industrial moment constantly come to the surface of our complex social order. Their solution rests, to a considerable extent, on the degree of insight with which members of this social order are prepared to cope with them. The greater part of the information upon which their judgments are based comes to them from a printed page.

There has been a tremendous increase in reading among the great mass of people within the last twenty-five or thirty years. This can be explained in part by the enforced leisure resultant from shorter hours of work, in part by the need for adjustment to industrial change. Expanded programs of adult education, increased publication of newspapers, magazines, and low-priced books, and a wide variety of simple and readable materials designed to appeal to a wide reading audience are other influential factors. The desire for economic security, for better social adjustment, for cultural advancement, for a greater understanding of local, national, and international problems as well as a determination to evaluate the proposals of various individuals and groups for re-directing social life, have caused a great many people to turn to serious reading.

Although interest in reading has increased with sur-

prising rapidity there remains serious doubt as to whether reading is serving as wide a function in social life as it might. Gray (1), among others, points out that communication by means of reading is far less effective than we have been led to believe. He says:

"Extended studies made at the adult level show that from 1/3 to 2/5 of the adult population of the United States are unable to read, with ease and understanding, material of sixth grade difficulty. They also show that the great bulk of the literature for adults is above that grade level in difficulty. These facts emphasize the urgent need of simple reading material for adults of limited reading ability and the importance of increasing the achievement of pupils well above the sixth grade."

While this statement refers directly to the United States there is little reason to suppose that the situation is markedly different in this country, and indeed, there is a growing concern about the reading interests and abilities of students at all levels of general education. In this connection schools and colleges face the responsibility of promoting growth in reading throughout the period of general education and of developing at each level of advancement broader interests and greater efficiency in reading than commonly prevails today. But it has been known long since that, as a general thing, pupils show little growth in what are known as the fundamental reading habits -- or in the

¹ William S. Gray. "A Decade of Progress," The Teaching of Reading: A Second Report, p.16. The Thirty-sixth Yearbook of the National Society for the Study of Education, Part I. Bloomington, Illinois: Public School Publishing Co., 1937.

mechanics of reading, if there be such a thing -- in the secondary schools, and indeed, very little after the fifth grade. From the standpoint of reading instruction in the high school, the most important question is whether this situation is due to a lack of systematic instruction or to the maturation, at this period in the life of the pupils, of the psychological processes of reading. Common sense might suggest that it is a bit of both. In any event, the presence of reading problems in the high school and college is not necessarily convincing evidence that reading was poorly taught or poorly learned in the elementary school. Primary teachers cannot be expected to teach the higher reading skills, and it therefore becomes the obligation of the secondary teacher to do so. The primary skills, of course, are basic, and deficiencies therein add to the secondary teacher's burden.

2. The General Attitude Toward the Problem

Of later years there has been developing a growing awareness of the essential relationship between reading and the subjects of the curriculum. Reading has assumed a new role in education, the role of a tool or a technique by means of which references and other printed matter are made available for use in the various curricular fields. In addition to the basic reading skills of recognition, comprehension, and retention, there are complex skills, used

chiefly in the curriculum field, which must be developed.

These include:

1. location -- the ability to find relevant material, to use indexes, tables of contents, card catalogues, standard reference books and other guides to reading;
2. organization -- the ability to select and evaluate ideas for specific purposes, to determine the relevance of particular books, selections, and passages;
3. the ability to adjust rate of reading and methods of study to the purpose at hand and to the type of material selected;
4. the ability to use ideas in oral and written expression, in solving problems and carrying out projects and activities.

In addition there is the skill of appreciation which is both intellectual and aesthetic in its composition, and is of great significance in recreatory reading and the enjoyment of literature.

Too few intensive studies have been made of the specific reading problems peculiar to each content field, but teachers and school officials are becoming increasingly aware of the prevalence of reading disability and its effects. It is becoming more apparent that adequate provi-

sion for reading needs is essential at every level of advancement, no matter how thoroughly reading is taught in the elementary school.

3. The Nature of the Specific Problem Under Investigation

The purpose of this investigation is to ascertain the relationship between reading ability and mental ability, on the one hand, and knowledge of some of the basic concepts of social studies, on the other, in a cross-sectional element of Alberta High School graduates; to determine statistically whether such a relationship exists; and to determine statistically the extent of any such relationship.

4. Procedure of This Investigation

- (1) Administration of tests to measure
 - a. Mental ability,
 - b. Reading ability,
 - c. Knowledge of Social Studies Concepts.
- (2) Determination of the correlations between scores obtained on
 - a. Test of Mental Abilities and Social Studies Concepts Test,
 - b. Test of Reading Abilities and Social Studies Concepts Test.
- (3) Evaluation of the significance of the statistical relationship.

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CHAPTER II

A SURVEY OF THE LITERATURE

Educational and psychological writings contain abundant evidence of the presence of reading disability. In a group of 1130 children, Durrell (1) found that 15.2% were reading at a year or more below standard for their mental ages; and 3%, two years or more. Durrell and Sullivan (2) found that of 6000 pupils, grades II to VI, 14.6% were reading at a level one year or more below their listening comprehension; and 3.4%, two years or more below. This unfortunate condition does not exist only in the elementary school. There is a surprisingly large number of deficient readers in the high school and in colleges, as revealed by objective tests. In some classes from 20 to 25% of the students have been found to be unable to read with understanding the materials ordinarily assigned. (3)

In one study reported by Horn (4) the median college freshman was found to read no better than the

¹ D. D. Durrell, "Improvement of Basic Reading Abilities." p. 278. Yonkers-on-Hudson, New York. World Book Co., 1940.

² D. D. Durrell and H. B. Sullivan, "Durrell-Sullivan Reading Capacity and Achievement Test Manual." Yonkers-on-Hudson, New York. World Book Co., 1937.

³ William S. Gray: "The Nature and Extent of the Reading Problem in General Education." The Educational Record, XIX, January 1938, p. 90.

⁴ Ernest Horn: "Methods of Instruction in the Social Studies." New York; Charles Scribner's and Sons, 1937. p.174.

upper 15% of the ninth grade tested, and 10% of them could not read as well as the median ninth grader.

Howard R. Anderson (5) holds that, in Social Studies, if the pupil cannot find materials bearing on the assigned topics, if he cannot understand the content which he has read, if he cannot interpret the maps and graphs included in his textbook, he certainly cannot be expected to make progress in achieving the more remote goals of instruction.

Students who meet successfully the foregoing demands have distinct advantages wherever the use of printed materials is concerned. Pertinent evidence to this effect is found in the results of studies of the relation between reading achievement and scholastic success. Book (6), for example, has shown that ability to read rapidly and efficiently is closely related to success in college. His findings also show that ability to read well is more important for success in some subjects than in others. According to McCallister (7) the correlations between comprehension in reading and success in survey courses in junior college

⁵ Howard R. Anderson: "Testing Basic Skills in the Social Studies." Elementary School Journal. Vol. 36., February 1936, pp. 424-35.

⁶ William F. Book: "How Well College Students Can Read." School and Society. XXVI. August 1927, pp. 242-48.

⁷ J. M. McCallister. "The Effectiveness of Remedial Instruction in Reading in the Junior High School." School Review. XXXIX. February 1931, pp. 97-111.

range from .47 for physical science to .67 for English.

A study by Ruth Strang (8) of the relationships between reading ability and scholastic success in both high school and college shows a range of coefficients of correlation from .16 to .70 with the majority falling between .30 and .50.

For a group of about 500 elementary school pupils, grades 3 to 8, whose IQ's ranged from 98 to 105, McKee (9) obtained correlations between the reading test of the Stanford Achievement battery and other tests of the battery as follows:

reading and spelling	.55
reading and language	.66
reading and arithmetic reasoning	.56
reading and arithmetic computation	.42
reading and nature study	.71
reading and history	.71
reading and literature	.71

There is also evidence accumulating to indicate that study skills, while positively related to other measured abilities, are not identical with them, and therefore need direct attention. Listed below are some of the relationships found between scores on the Morse-McCune Social Studies Skills Test (College Form), and other measures for two hundred representative freshmen in the Gene-

⁸ Ruth Strang: "Problems in the Improvement of Reading in High School and College." p. 28. Science Press Printing Co., Lancaster, Pa., 1938.

⁹ P. McKee. "Reading and Literature in the Elementary School." Boston; Houghton-Mifflin Co., 1934. pp. 36-45.

ral College of the University of Minnesota. (10)

<u>Variable</u>	<u>Correlation</u>
1. American Council on Education Psychological Test (1937 form).	.41
2. Cooperative English Test	.23
3. Nelson-Denny Reading Test	.41

Within the last twenty-five years educators have begun to insist that pupils be taught the wisest and best utilization of reading skills and much evidence has been brought forth to justify their demands. In 1925 Reeder(11) divided several hundred fifth-grade children into groups on the basis of their scores on several reading tests, their age, and their standing on a test of historical information. One half of these children studied their reading assignments as usual, while the other half were shown how to make summaries and then were required to use summarizing as a technique in their daily preparation of lessons. This difference in study methods resulted in increased mastery of the subject matter by the latter group as shown by repeating the tests for both the experimental and non-experimental groups, at the end of twelve weeks.

10 "Adapting Instruction in the Social Studies to Individual Differences." Fifteenth Yearbook of the National Council for the Social Studies. 1944. p. 94.

11 E. H. Reeder: "A Method of Directing Children's Study of Geography." Teacher's College Contribution to Education No. 193. Bureau of Publications, Columbia University. 1925.

In addition to attaining a better understanding, the trained children had been equipped with one technique for forcing a distinction between the important and the unimportant -- that is, they had developed a general method of study. Reeder claimed that "both the summary and the outline were well worth teaching, not only as a means of improving comprehension but also as permanent equipment by use of which meaning may be extracted from an exposition."

Bining and Bining (12), in Teaching the Social Studies in the Secondary Schools, advocated that emphasis be laid on developing the techniques of reading, on measurement of reading ability by diagnostic tests, and on the application of remedial measures. They recommended instruction in the preparation of outlines and summaries, and in the mechanical make-up of books, including the purpose of foot-notes, and the meaning of footnote abbreviations, the use of the table of contents, and of the index.

A pioneer effort in diagnostic testing began in 1935 with the construction of the Iowa Every-Pupil Test of Basic Skills. Anderson (13) says that when the battery of tests was administered, evidence of achievement in basic skills seemed to indicate that Iowa pupils completing their elementary education were inadequately prepared to do effec-

12 Bining and Bining: "Teaching the Social Studies in the Secondary School." McGraw-Hill Book Co. Inc., New York, 1935. p. 292.

13 Howard R. Anderson. op. cit. pp. 424-35.

and the other two, the first of which is the most important, are the most important.

The first of these is the most important, and the second is the most important.

The second of these is the most important, and the third is the most important.

The third of these is the most important, and the fourth is the most important.

The fourth of these is the most important, and the fifth is the most important.

The fifth of these is the most important, and the sixth is the most important.

The sixth of these is the most important, and the seventh is the most important.

The seventh of these is the most important, and the eighth is the most important.

The eighth of these is the most important, and the ninth is the most important.

The ninth of these is the most important, and the tenth is the most important.

The tenth of these is the most important, and the eleventh is the most important.

The eleventh of these is the most important, and the twelfth is the most important.

The twelfth of these is the most important, and the thirteenth is the most important.

The thirteenth of these is the most important, and the fourteenth is the most important.

The fourteenth of these is the most important, and the fifteenth is the most important.

The fifteenth of these is the most important, and the sixteenth is the most important.

The sixteenth of these is the most important, and the seventeenth is the most important.

The seventeenth of these is the most important, and the eighteenth is the most important.

The eighteenth of these is the most important, and the nineteenth is the most important.

The nineteenth of these is the most important, and the twentieth is the most important.

tive work in social studies at the high school level, and that "there is no reason to assume that the situation is markedly different in other states." Nor have we any reason to assume that the situation is different in this country.

In 1944 Gerald A. Yoakam (14) of the University of Pittsburgh, writing on the concept of reading as it relates to the school subjects advocated systematic instruction in reading at the elementary school level and later incidental instruction at all levels in relation to the content area. He states that the child, in the curriculum field, meets new and strange concepts. Unless the teacher is prepared to help him understand these concepts he may fail to interpret them correctly and thus not profit from the ideas presented in the curricular field. It follows, therefore, that the teacher in the curricular field must assume responsibility for the adequate use of fundamental skills already learned, for the development of new and special skills required, and for the general effectiveness of the reader in his field. He must know the reading problems, techniques, and procedures, how they are learned, how they are used, and how to use them effectively in the accomplishment of his aims. But teachers of the content fields often

¹⁴ Gerald A. Yoakam: "Essential Relationships between Reading and the Subject Fields or Areas of the Curriculum." Journal of Educational Research. Vol. 38, 1944-45. p.462.

question the value of devoting any time to guidance in reading on the grounds that it defeats in part the achievement of the aims of teaching their respective subjects. This viewpoint is definitely refuted by the results of a controlled experiment by Rudolf (15) which aimed to determine the effects of one term of reading instruction in a Social Studies class. Both groups were taught by experienced Social Studies teachers who followed the same course of study and used the same textbooks and other teaching aids. However, the teachers of the experimental group adjusted the techniques and materials used to provide specific training in needed reading and study skills as an integral part of the units studied. The findings showed that "statistically significant gains in social studies knowledge, study skills, and reading comprehension were made by all classes in the experimental group", and in excess of gains made by the control group. The investigator concluded that the study "demonstrates the desirability of providing reading instruction in social studies classes in order that the pupils may more adequately master the social studies."

¹⁵ Kathleen Brady Rudolf: "The Effects of Reading Instruction on Achievement in Eighth Grade Social Studies." Contribution to Education No. 945. New York: Bureau of Publications. Teachers College, Columbia University, 1949.

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"Adapting Instruction in the Social Studies to Individual Differences." Fifteenth Yearbook of the National Council for the Social Studies. 1944. p. 94.

CHAPTER III

THE NATURE OF THE INVESTIGATION

1. Population

The experimental group for this investigation consisted of 274 students in the Junior Elementary and Intermediate Program in the Faculty of Education, Edmonton, Alberta, in the 1949-50 winter session. All members of this group had received an Alberta High School Diploma and a small percentage had complete matriculation. As might be expected, the group tested well above average in intelligence. The median IQ of the group was 118.1 in a range of 92 to 139 in the results obtained from the one intelligence test used.

The academic qualifications of the group made it eminently suitable for the purposes of this investigation for all had, of course, obtained credits in the high school courses English 1, 2 and 3 and Social Studies 1, 2 and 3. Further, the members of the group came from high schools of all types and from all over the province.

A group of 100 Junior Elementary and Intermediate students in the Faculty of Education, Calgary Branch, was used in a pilot study in connection with this investigation. The Calgary group may be considered comparable in all respects to the experimental group.

2. Tests used in the Investigation

Test data was collected for 274 students from the administration of the following tests:

1. Test of Mental Ability:

Vocational Guidance Centre Intelligence Indicator -- Intermediate, Grades VII - XII.

2. Test of Reading Ability:

Iowa Silent Reading Test -- Advanced Test -- Form Am - Revised.

3. Test of Subject Matter Achievement:

Social Studies Concepts Test.

In the pilot study on the Calgary group the second draft of the Social Studies Concepts Test was used.

THE VOCATIONAL GUIDANCE CENTRE INTELLIGENCE INDICATOR

This test is an adaptation of the Henmon-Nelson Tests of Mental Ability by M. D. Parmenter, M.A., Lecturer in Guidance and Director of the Vocational Guidance Centre, Ontario College of Education, University of Toronto.

In a review of the test, J. P. Guilford, (1) Professor of Psychology at the University of Southern California, says:

¹ The 1940 Mental Measurements Yearbook. Oscar Krisen Buros Editor. p. 222. Highland Park, New Jersey. 1941.
see Reviews by
August Dvorak, Professor of Education, University of Washington,
J. P. Guilford, Professor of Psychology, University of Southern California.

"The tests are appropriately entitled 'Tests of Mental Ability' rather than 'Tests of Intelligence' though the authors imply very clearly that 'Intelligence' is the important unity which they are measuring. This being the emphasis, it is fortunate that they include a variety of items which demand a variety of mental operations, thus touching many areas of mental ability sampled in so-called tests of intelligence."

The classes of items included are: following directions, arithmetical problems, "common-sense", word meaning, word opposites, and geometric analogies. These varieties are scrambled and rotated so that, when taken in order, an equal number of each kind will be attempted.

As a preliminary to the preparation of the test form, many experimental items were tried out and an item analysis made, usually two times. As a consequence the highest validity and reliability that is now attainable was probably secured. At any rate, the reliability coefficients are typically up in the low 90's, even within the narrow ranges of ability provided by single age or grade groups. In determining validity the authors secured correlation coefficients between IQ's of .72 to .88 for groups varying from 57 to 554 pupils to whom these tests and one of five other tests (Otis, Terman, American Council, Kuhlman-Anderson, and Illinois) had been administered.

THE IOWA SILENT READING TEST

New Edition. Advanced Test: Form Am
Revised 1943. World Book Co.

This test was prepared by:

H. A. Greene, Director, Bureau of Educational Research
and Service, University of Iowa,

A. N. Jorgensen, President, University of Connecticut, and

V. H. Kelley, University Appointment Office, University of
Arizona.

The Iowa Silent Reading Advanced Test is designed
to measure the proficiency of pupils in high school and
junior college in doing silent reading of the work study
type. The unit skills measured are as follows:

Test 1. Rate and Comprehension.

Science material.

Social studies material.

Test 2. Directed Reading.

Test 3. Poetry Comprehension.

Test 4. Word Meaning.

Social studies.

Science.

Mathematics.

English.

Test 5. Sentence Meaning.

Test 6. Paragraph Comprehension.

Selection of central idea of paragraph.

Identification of details essential to the
meaning of the paragraph.

Test 7. Location of Information.

Use of Index.

Selection of key words.

In the opinion of William W. Turnbull, (2) head of

² The Third Mental Measurements Yearbook. Oscar Krisen Buros,
Editor. Rutgers University Press, New Brunswick, 1949. pp.
489-90. See reviews by
Frederick B. Davis, Professor of Psychology, George Peabody
College for Teachers, and Director Test Research Service,
Nashville, Tennessee, and
William W. Turnbull, Secretary of the Board and Head of the
Test Construction Department, College Entrance Examina-
tion Board, Princeton, New Jersey.

the test construction department of Princeton University, this test is justifiably the leader in its field. The test was standardized on a national sample of between 1500 and 2000 students at each grade level. From all appearances the test should provide a valid measure of reading ability if we accept, as did the authors of the text, that validity may be expressed in terms of the extent to which the test sets up situations calling into play the skills or abilities considered fundamental to success in the given field. (3) No statistical evidence of validity is offered.

The total score for each form has a reliability coefficient (computed separately for each grade level by Kuder-Richardson formula number 21, using over 1000 cases in all grades but one) of .94 or .95, with a probable error of measurement of 2 points on a scale which has a standard deviation of 13 to 14 for each grade. Thus the reliability of the total test is high. The coefficients of the subtests range, in general, from .70 to .90 (probable error of measurement from 4 to 7 points.) The authors point out that all probable errors of measurement are in terms of the standard score scale, and that the probable errors of measurement in terms of the raw scores would be much smaller, -- on the average about one third as large as those for the standard

³ See Manual of Directions for Advanced Test, Form Am. p.3.

score scale. (4) However, in view of the range of the subtests coefficients, probably limited reliance should be placed on the subtest scores in individual cases, although their reliability should be adequate for group comparisons.

While the advisability of including the reading rate sub-score in the total score might be questioned, and although the material is somewhat artificial and academic, the Iowa test gives a valid measure of the work-study type of reading ability. It is considered to be an excellent instrument for identifying students in need of remedial work, for sectioning classes, and for securing class norms. Evidence of the recognized leadership of the Iowa test was given in a comprehensive study of reading in colleges by Strang, (5) who reports in summary as follows:

"It is a general practice of colleges and universities to survey the reading ability of their entering freshmen. For this purpose one of three tests is used most frequently -- the revised Iowa Silent Reading Test, the Nelson-Denny, and the Minnesota. The Iowa Test was mentioned by seventeen colleges; the Nelson-Denny by eleven; and the Minnesota by six."

THE TEST OF SOCIAL STUDIES CONCEPTS

This investigation required a test which would measure the extent to which members of the experimental group had acquired a knowledge and an understanding of some of the basic concepts of social studies. Specifically, it was desired to measure knowledge of:

⁵ Ruth Strang: "The Improvement of Reading in College." English Journal, vol. 26, September 1937, pp. 548-59.

1. the evolution of society
2. principles, problems, and usage of the present,
3. relationships -- cause and effect,
men and events,
4. geographical placement,
5. time placement.

These five 'concepts' are considered by the writer to be among the most important in the social studies. Knowledge of primitive life, the beginnings of organized government, national rivalries, industrial changes, religious struggles, the achievement of political democracy, is basic to an understanding of the present situation. The need for wide knowledge of current affairs is particularly pressing upon the citizen of a democracy if he is to adjust to new conditions, face the many different social issues, political problems, scientific advances, the industrial and economic progress, and the tensions which result from inequalities in that progress. The idea of interdependence, the concept of relationship, is coming more and more to permeate all aspects of life, in a world that is continually shrinking under ever-improving means of communication. Concepts of time and place are of particular importance where a social event must be dated and placed.

They are necessary not only to describe the event itself, but also to facilitate our appreciation of it. The idea of the evolution of the institutions has become so much a part of our thinking that we regard

time and place as milestones by which we estimate the stage of growth which the institution or movement has reached. (6)

There is no implication that these are the only major concepts. This investigation required an objective test that could be administered easily and which could be completed in 45 minutes. The test was prepared and used in full awareness of its many shortcomings, which are due, in part at least, to the magnitude of the field and the previously mentioned time element. A copy of the test appears as Appendix A in this report.

Preparation of the Test

A first draft of the test, consisting of 240 objective-type questions of the multiple choice variety, was prepared. This was discussed in committee and 90 items were rejected for reasons of irrelevance, obscurity, poor phrasing, and general unsuitability. Other items were amended to improve, simplify, or clarify them.

The first test, consisting of 150 multiple-choice questions, was prepared and administered as a pilot study to the Calgary group. This group was comparable in all respects to the experimental group, and served admirably for the purpose of test evaluation. Ample time was allowed for completion of the test by all students.

⁶ Edgar Bruce Wesley: "Teaching the Social Studies." New York, D. C. Heath and Co. p. 403. 1937.

An item analysis was performed on the scores obtained by the Calgary group. The Difficulty Factor was derived by taking the decimal equivalent of the percentage of students in the upper and lower quartiles who failed to respond correctly to each separate question. The Discrimination Factor was derived by taking the decimal equivalent of the difference in percentage of correct responses between the upper and lower quartiles. On the basis of this item analysis, 75 questions were selected for the final form of the test. The tables below illustrate the interval and frequency of the discrimination and difficulty factors as they appeared in the pilot study on the Calgary group, for the 75 questions selected.

TABLE I

DISCRIMINATION FACTORS OF TEST QUESTIONS SELECTED
IN THE PILOT STUDY

INTERVAL	FREQUENCY
.2 - .299	13
.3 - .399	27
.4 - .499	24
.5 - .599	2
.6 - .699	8
.7 - .799	1

TABLE II

DIFFICULTY FACTORS OF TEST QUESTIONS SELECTED
IN THE PILOT STUDY

INTERVAL			FREQUENCY
.2	-	.299	1
.3	-	.399	12
.4	-	.499	11
.5	-	.599	10
.6	-	.699	24
.7	-	.799	12
.8	-	.899	5

The final form of the test, so constituted, was administered to the whole experimental group at the same time, and under normal test conditions. The test was thoroughly objective in that opinion, bias, and judgment of the marker were completely eliminated. Only one answer satisfied the requirements of each question. Outside of purely chance errors there would be no variation in the score assigned to each test paper by different persons or by the same person on different occasions.

An item analysis, using the same technique as before, was performed on the scores obtained by the experimental group. The results are summarized in the following tables.

TABLE III

DISCRIMINATION FACTORS OF SOCIAL STUDIES CONCEPTS
TEST QUESTIONS

INTERVAL	FREQUENCY
.1 - .199	7
.2 - .299	22
.3 - .399	23
.4 - .499	15
.5 - .599	6
.6 - .699	1
.7 - .799	1

TABLE IV

DIFFICULTY FACTORS OF SOCIAL STUDIES CONCEPTS
TEST QUESTIONS

INTERVAL	FREQUENCY
.1 - .199	8
.2 - .299	14
.3 - .399	19
.4 - .499	9
.5 - .599	9
.6 - .699	11
.7 - .799	5

The reliability of the social studies concepts test was determined by the split-half method. The number of correct responses on the odd-numbered and on the even-numbered questions was determined for each student. By the Pearson Product-Moment method of computing the co-

efficient of correlation, (7) a reliability coefficient of .75 was obtained.

The reliability coefficient which might be expected for a test as long as the two halves combined was calculated by the Spearman-Brown Prophecy Formula (8)

$$r_n = \frac{nr_{12}}{1 + (n-1)r_{12}}$$

which, in this case where $n = 2$ and $r_{12} =$ the coefficient of reliability, i.e. .75, prophesies a reliability coefficient of .857.

The Index of Reliability (9) was derived by the application of the formula

$$r_{1\infty} = \sqrt{r_{11}}$$

in which $r_{11} =$ the reliability of the given test, i.e. .857, and $r_{1\infty} =$ the correlation between obtained and true scores. The symbol " ∞ " (infinity) designates "true scores", that is, scores obtained from an infinite number of administrations of the test to the same group. For the social studies test the index of reliability is .9026.

⁷ E. F. Lindquist. "A First Course in Statistics." Houghton-Mifflin Co. 1938. Riverside Press, Cambridge, Mass. Chapter 10, pp. 137-187.

⁸ Henry E. Garrett. Statistics in Psychology and Education. Longmans, Green and Co., New York, 1947. p. 388.

⁹ H. E. Garrett, op. cit. p. 391.

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Frederick B. Davis, Professor of Psychology, George Peabody College for Teachers, and Director Test Research Service, Nashville, Tennessee,
William W. Turnbull, Secretary of the Board and Head of the Test Construction Department, College Entrance Examination Board, Princeton, New Jersey.

CHAPTER IV

RESULTS OF THE TESTING PROGRAM

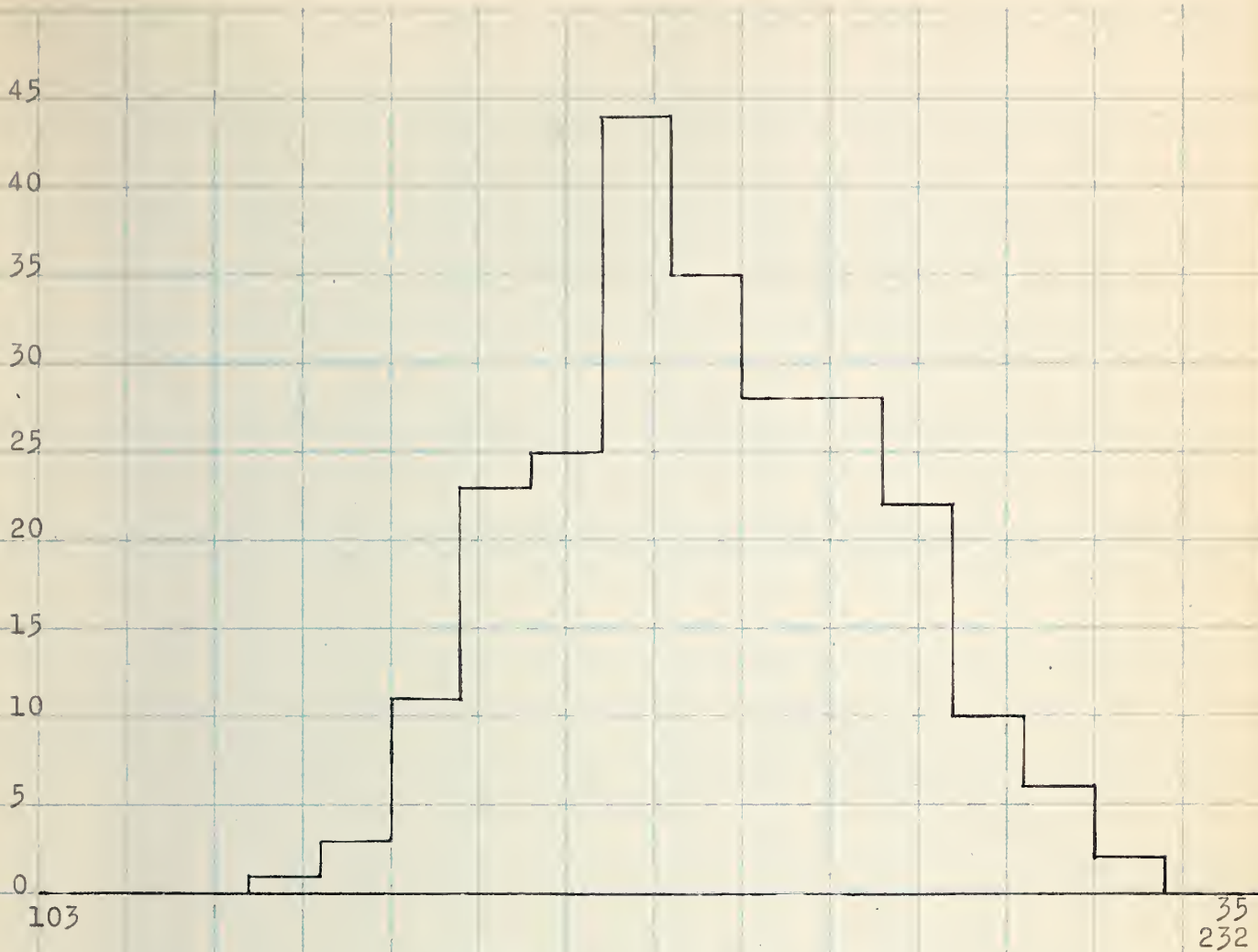
Scores obtained on the various tests and sub-tests used in this study are discussed in the following pages and are represented diagrammatically by means of curves of frequency distribution. Terms used in connection with the various drawings and in discussing the results are defined below:

1. Possible range of scores -- in the sub-tests of the Iowa Silent Reading Test both raw score and standardized score limits are quoted. For the Social Studies test raw score limits only are given, and for the Intelligence test the range of IQ's is given.
2. Actual range of scores -- the range of standardized and/or raw scores, or IQ's, obtained by members of the experimental group used in this investigation.
3. Established median -- that point established by the authors of the Iowa Silent Reading Test as the median score of their standardization group.
4. Median of the Experimental Group -- that point established as the median score of the experimental group used in this investigation.

On the Reading Comprehension test the raw scores

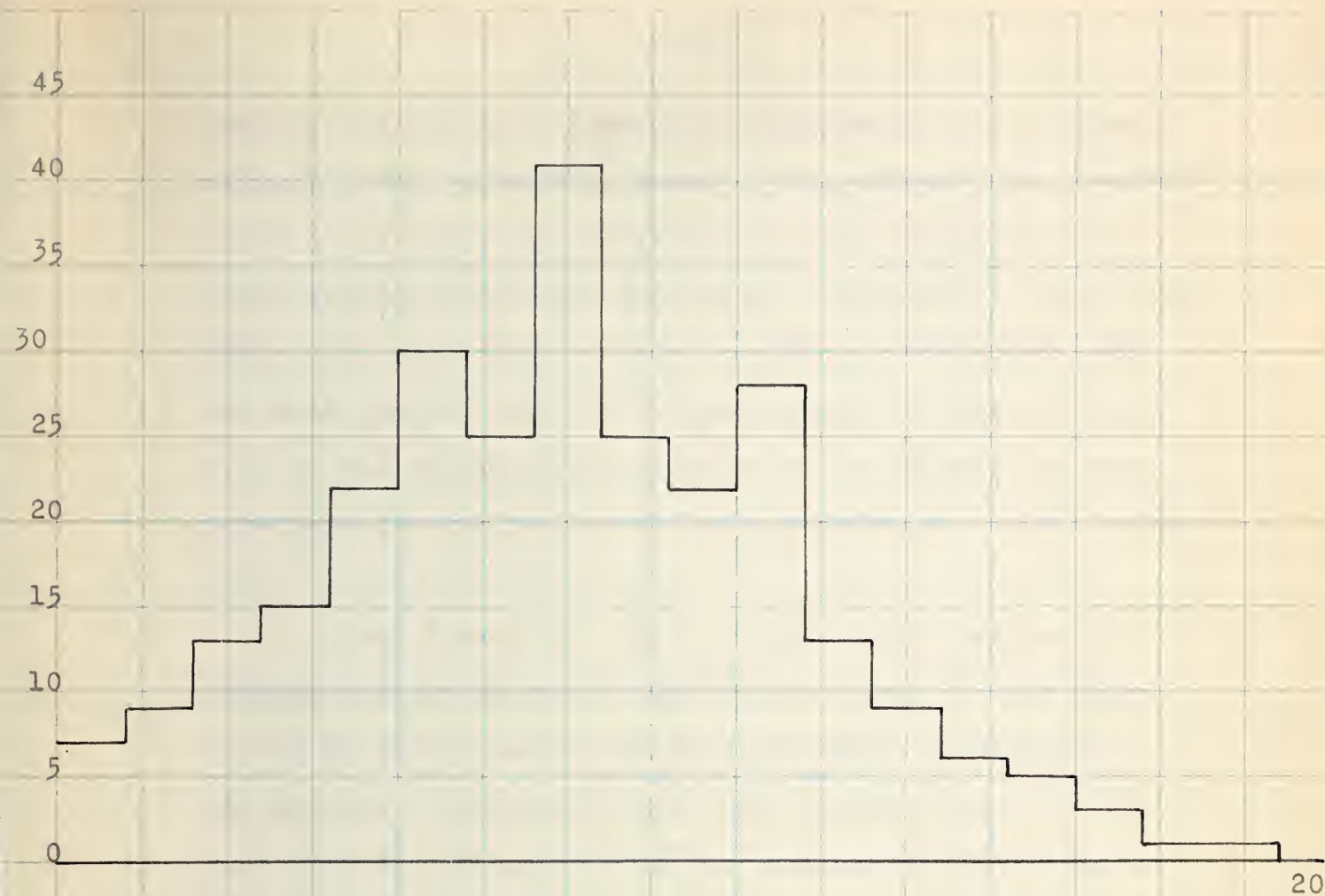
ranged from 5 to 30 in a possible range of 0 to 35. Distribution of scores was comparatively good but the median of the experimental group fell considerably below the median of the standardization group, that of the former being 167.5 while the median of the latter group was 185.3. This wide difference in medians is undoubtedly due, in part at least, to that almost unavoidable weakness of reading comprehension tests: the difficulty in preventing general knowledge from affecting the score. Part B of the comprehension test dealt with the government of the United States. Senior high school students and college freshmen could scarcely help but have a certain advantage over a comparable group of Canadian students when such a topic is used in a test of this nature. Nevertheless, a spread of 17.8 points does represent a considerable difference.

On Test Number 2, Directed Reading, the raw scores ranged from 0 to 17 in a possible range of 0 to 20. Distribution of scores on this test was not quite as good as on the comprehension test. The median of the standardization group was 180.6 while the median of the experimental group was 160.5, a difference of 20.1, which is not so easily accounted for as in the previous test. The test is designed to measure the pupil's ability to comprehend



Number of students - 274
Possible range of raw scores 0 - 35
Actual range of raw scores 5 - 30
Possible range of standardized scores 103 - 232
Actual range of standardized scores 118 - 207
Median of Standardization Group - 185.3
Median of Experimental Group - 167.5

Figure 1. - Frequency Curve of distribution of Reading Comprehension Scores. Test No. 1B



Number of Students - 274

Possible range of raw scores 0 - 20

Actual range of raw scores 0 - 17

Possible range of standardized scores 121 - 220

Actual range of standardized scores 121 - 208

Median of Standardization Group - 180.6

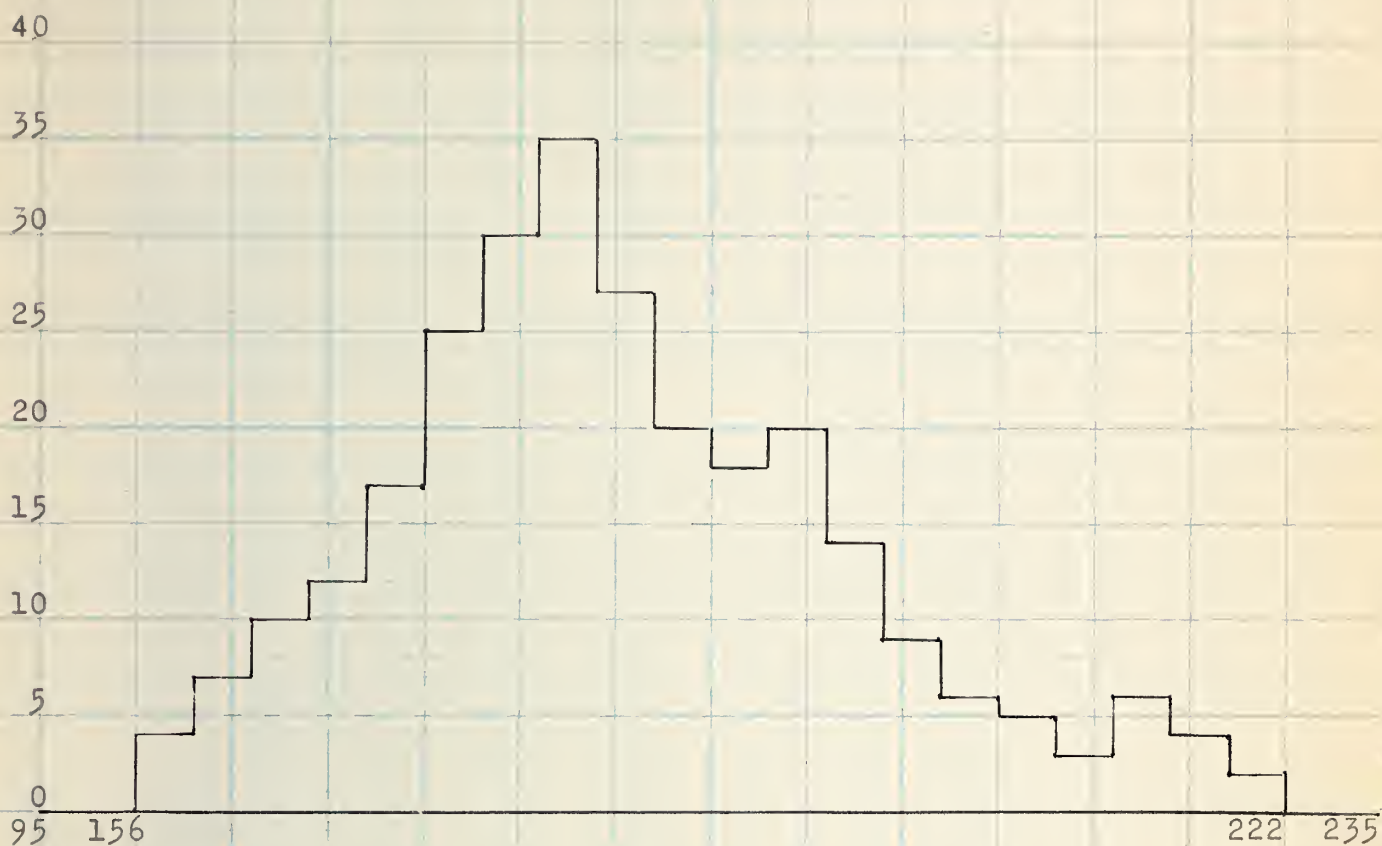
Median of Experimental Group - 160.5

Figure 2. - Frequency Curve of distribution of Directed Reading Scores. Test No. 2

general and specific situations expressed in the content without unduly stressing memory. The student was required to find and indicate the numbers of the sentences in a story which contained the answers to a series of questions. While one individual may read one kind of material well and read another type of content poorly, a group of the size of the experimental group might be expected to compare more favorably than did the experimental group in this case.

Test Number 4 - Word Meaning - was designed to measure understanding of significant words in four high school subjects: social science, science, mathematics, and English. Results on this test ranged from 15 to 63 in a possible range of 0 to 70. Scores obtained were on the low side, the median of the experimental group being 182.9 as compared to 190.4 for the standardization group.

Scores obtained on Test Number 5 - the test of Sentence Meaning - range from 15 to 48 in a possible range of 0 to 50. Distribution of scores was reasonably well balanced and the medians of the experimental and standardization groups were identical at 190.4 on the standardized scale. The sentences comprising this test are stated in such a way that the meaning of the sentence as a whole must be comprehended. It is difficult to explain the



Number of Students - 274

Possible range of raw scores 0 - 70

Actual range of raw scores 15 - 63

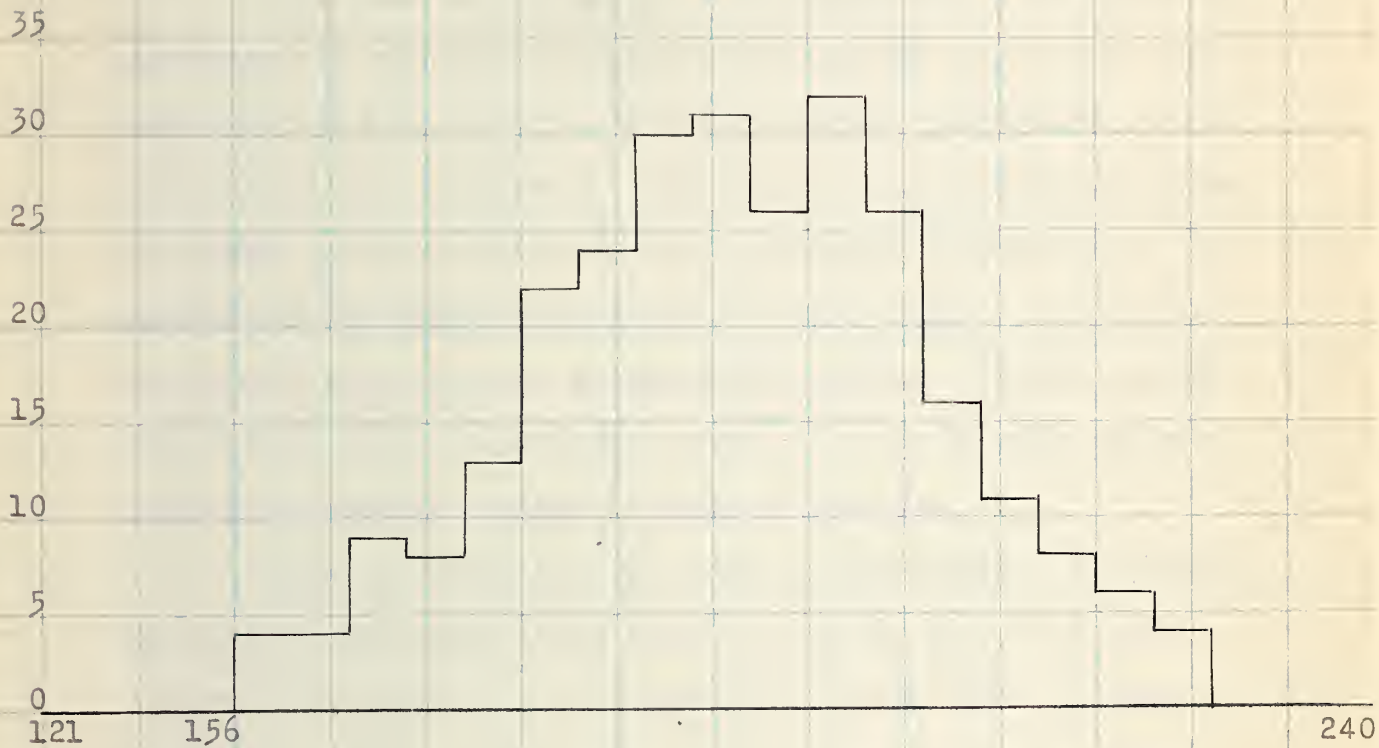
Possible range of standardized scores 95 - 235

Actual range of standardized scores 156 - 222

Median of Standardization Group - 190.4

Median of Experimental Group - 182.9

Figure 3. - Frequency Curve of distribution of Word Meaning Scores. Test No. 4



Number of Students - 274

Possible range of raw scores 0 - 50

Actual range of raw scores 15 - 48

Possible range of standardized scores 121 - 240

Actual range of standardized scores 156 - 234

Median of Standardization Group - 190.4

Median of Experimental Group - 190.4

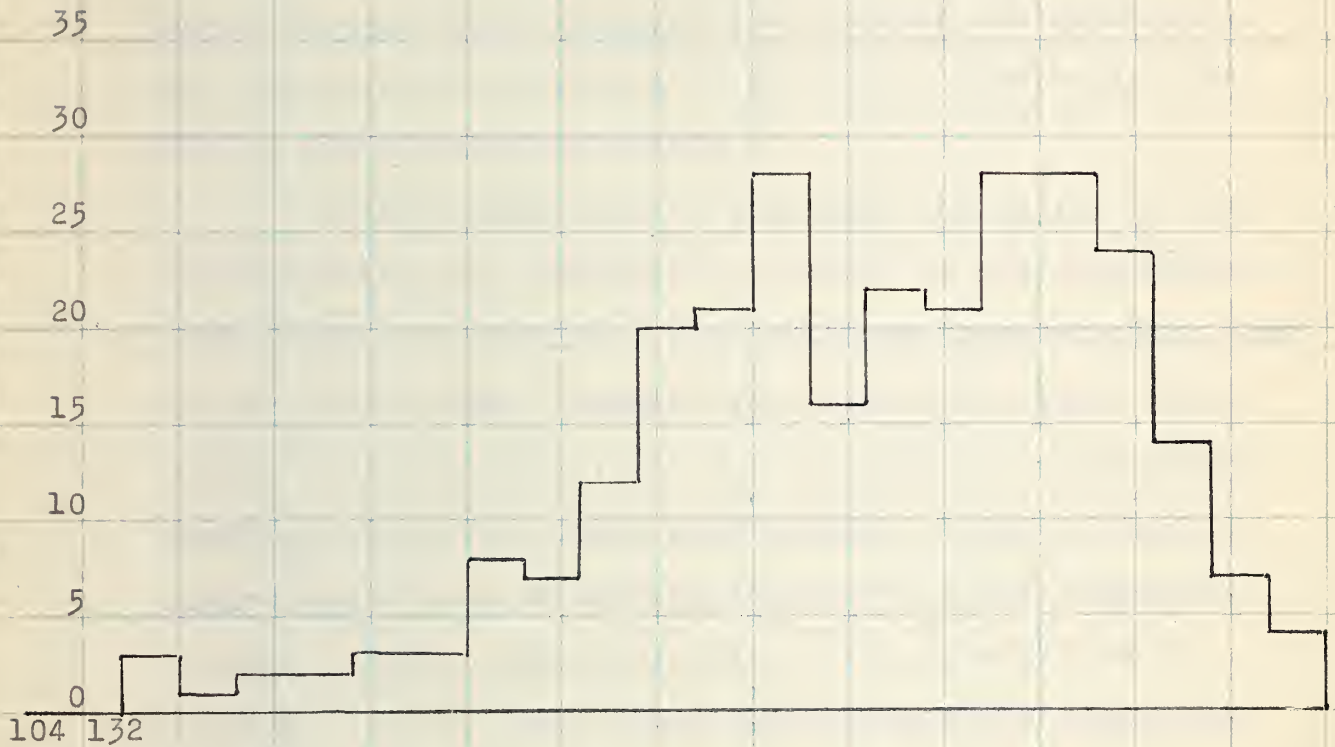
Figure 4. - Frequency Curve of distribution of Sentence Meaning Scores. Test No. 5

success of the experimental group on this test in the light of results obtained on the test of word meanings.

The test of paragraph comprehension, Test Number 6, measures the ability to select the central topic of a paragraph and the ability to identify details essential to the meaning of the paragraph. The experimental group compared favorably with the standardization group on this test, the median of the former being 177.5 while that of the latter group was 180.0 on the standardized scale. Scores ranged from 14 to 36 in a possible range of 0 to 36 with the majority of scores falling between 21 and 34.

One of the major outcomes of instruction in silent reading of the work-study type is the ability to locate information quickly and accurately in the light of the problem at hand. Test Number 7 includes two major elements involved in locating information. Part A refers the pupil directly to a simple index as a source of answers to specific questions. Scores were quite well distributed over a range of from 2 to 14 in a possible range of 0 to 15, but the median of the experimental group was only 170.5 as compared with 182.1 for the standardization group.

Part B of this test measures the ability to select words under which information about a given question might be found. The experimental group did much better on this part than on the previous portion of the test. The median



Number of Students - 274

Possible range of raw scores 0 - 36

Actual range of raw scores 14 - 36

Possible range of standardized scores 104 - 220

Actual range of standardized scores 132 - 220

Median of Standardization Group - 180.0

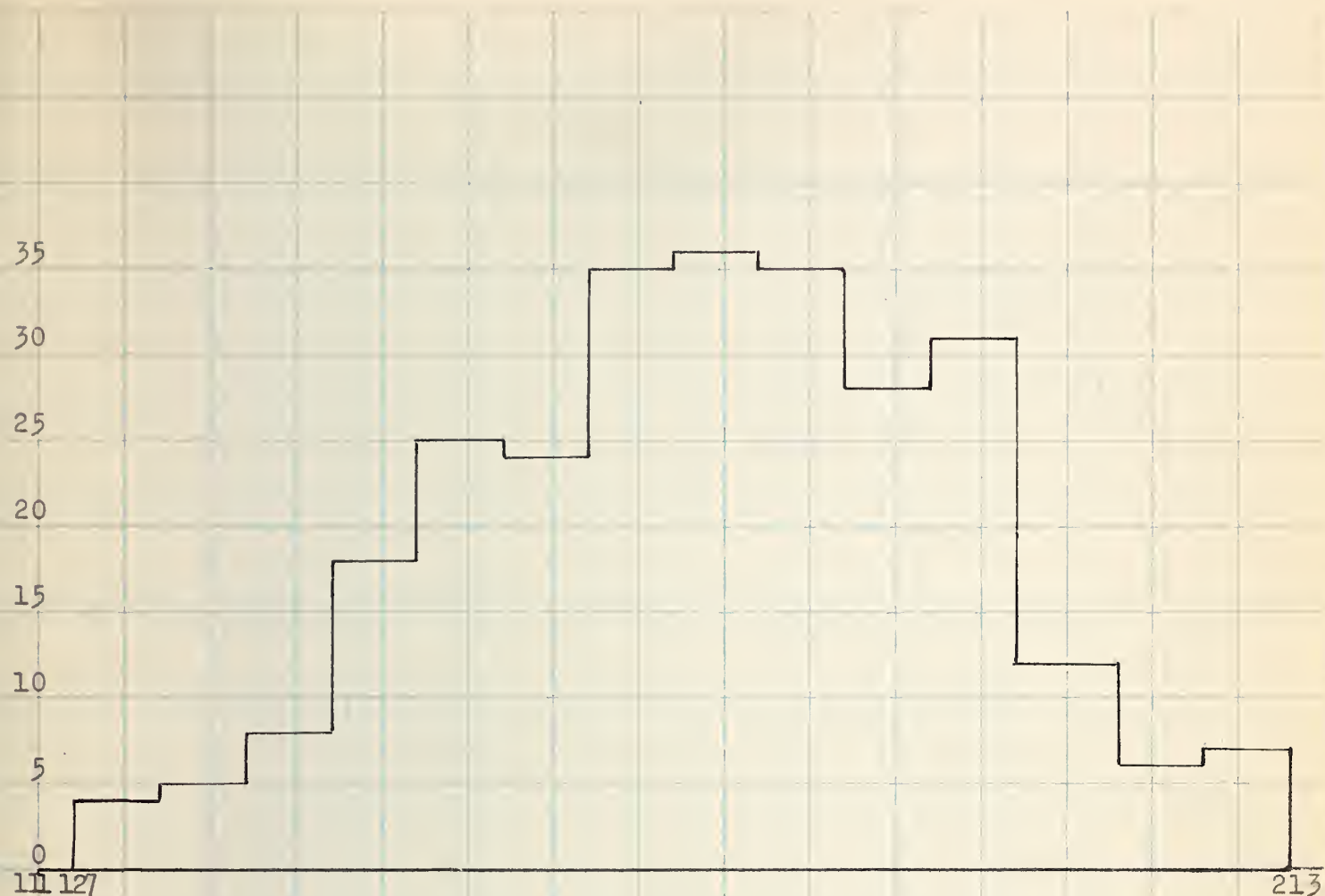
Median of Experimental Group - 177.5

Figure 5. - Frequency Curve of distribution of Paragraph Comprehension Scores. Test No. 6

of the experimental group was 177.8 as compared with 178.6 for the standardization group. Raw scores ranged from 4 to 20 in a possible range of 0 to 20 with the majority of the scores falling between 10 and 18, or between 165 and 210 on the standardized scale.

It is interesting to note that the median of the experimental group exceeded the median of the standardization group on only one of the sub-tests comprising the Iowa Silent Reading Test, namely the Reading Rate test. This aspect of reading skill was not considered in this study. Reading rate is an almost meaningless concept because an individual's rate of reading depends upon his immediate purpose and upon the difficulty of the material he is reading. In the Iowa Silent Reading Test the directions for the rate-comprehension test say: "This is a test to see how well and how rapidly you can read silently. Read the story below so that you can answer questions about it." (2) The testee has no idea what kind of questions will be asked, whether they will be penetrating or superficial. The relatively high median score on the reading rate test and the relatively low score on the reading comprehension test would seem to indicate that the experimental group were predominantly superficial readers, prone to skim material

² Iowa Silent Reading Tests, New Edition, Advanced Test: Form Am. pp. 2-3.



Number of Students - 274

Possible range of raw scores 0 - 15

Actual range of raw scores 2 - 14

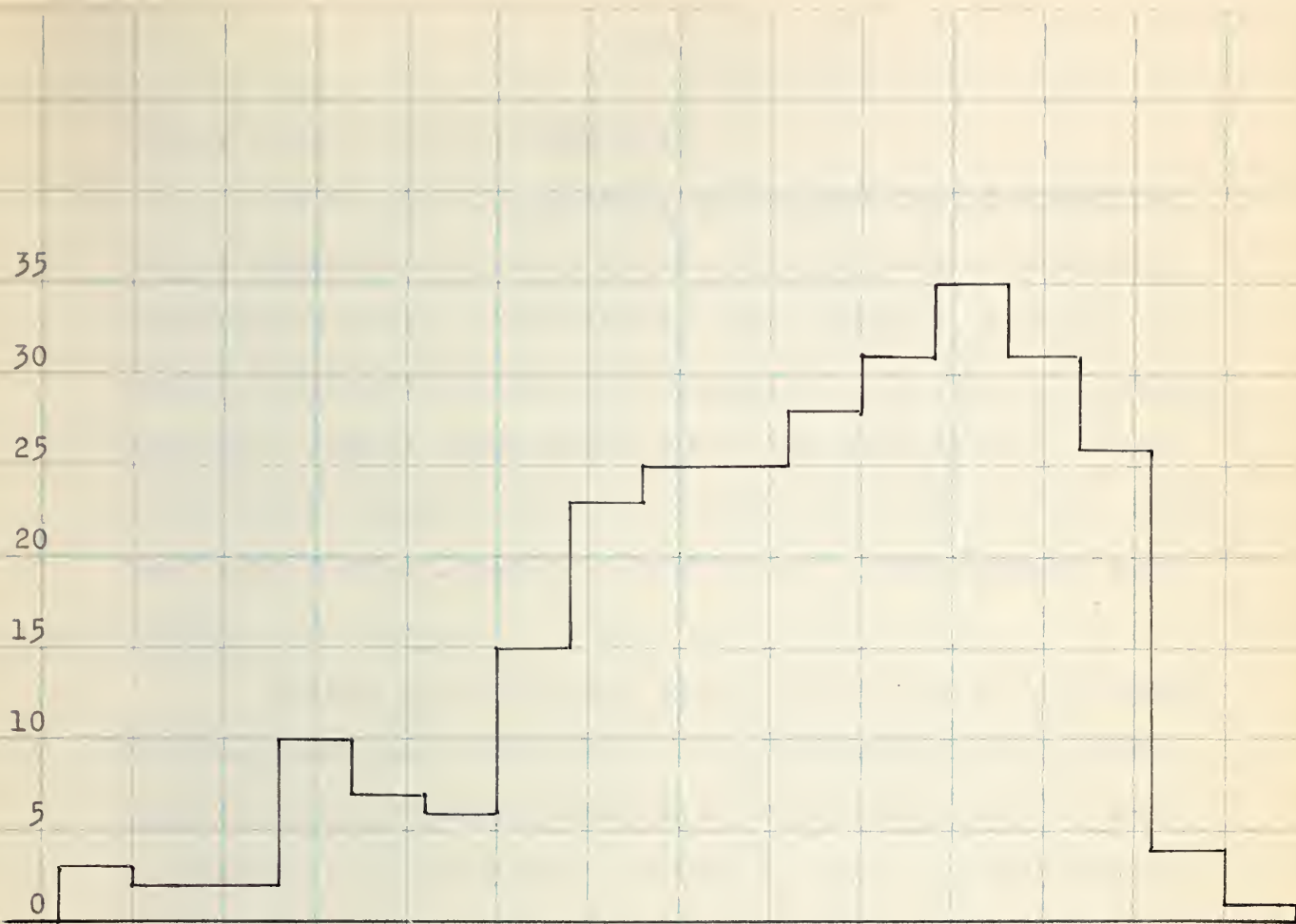
Possible range of standardized scores 111 - 213

Actual range of standardized scores 127 - 202

Median of Standardization Group - 182.1

Median of Experimental Group - 170.5

Figure 6. - Frequency Curve of distribution of Use of Index Scores. Test No. 7A



Number of Students - 274

Possible range of raw scores 0 - 20

Actual range of raw scores 4 - 20

Possible range of standardized scores 128 - 234

Actual range of standardized scores 141 - 234

Median of Standardization Group - 178.6

Median of Experimental Group - 177.8

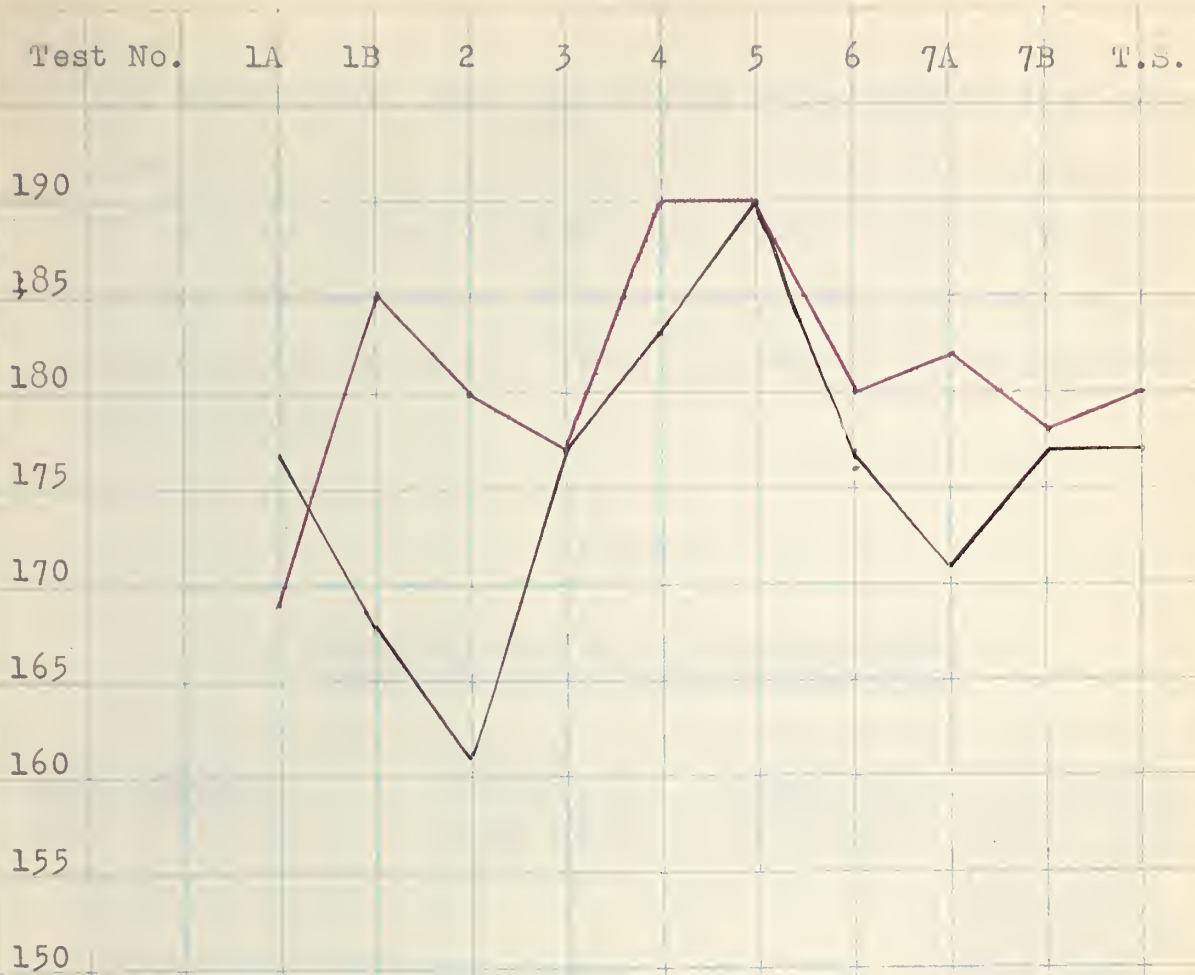
Figure 7. - Frequency Curve of distribution of Selection of Key Words. Test No. 7B

rather than to read intensively.

It is also interesting to observe that the median of the experimental group coincided with that of the standardization group on two tests, Test Number 3, the test of poetry comprehension and Test Number 5, the test of sentence meaning. Poetry comprehension was not considered in this study on the grounds that this aspect of reading skill would bear little relationship to mastery of social studies concepts.

On all the other sub-tests the median of the experimental group fell below that of the standardization group. The differences ranged from .8 on test number 7B, the test on selection of Key words, as high as 20.1 on Test Number 2, the test of directed reading. The average spread between medians was 9.1 points on the standardized scale.

Table V below summarizes the more important data derived from the administration of the Iowa Silent Reading Test. In this table the medians of the experimental and standardization groups are compared, and the table also indicates the percentage of the experimental group which fell below the median of the standardization group. Comments made previously with reference to reading rate and reading comprehension of the experimental group are supported by this table, which indicates that 30 per cent of



Red line -- Median scores of standardization group.

Black line -- Median scores of experimental group.

T.S. -- Total Score.

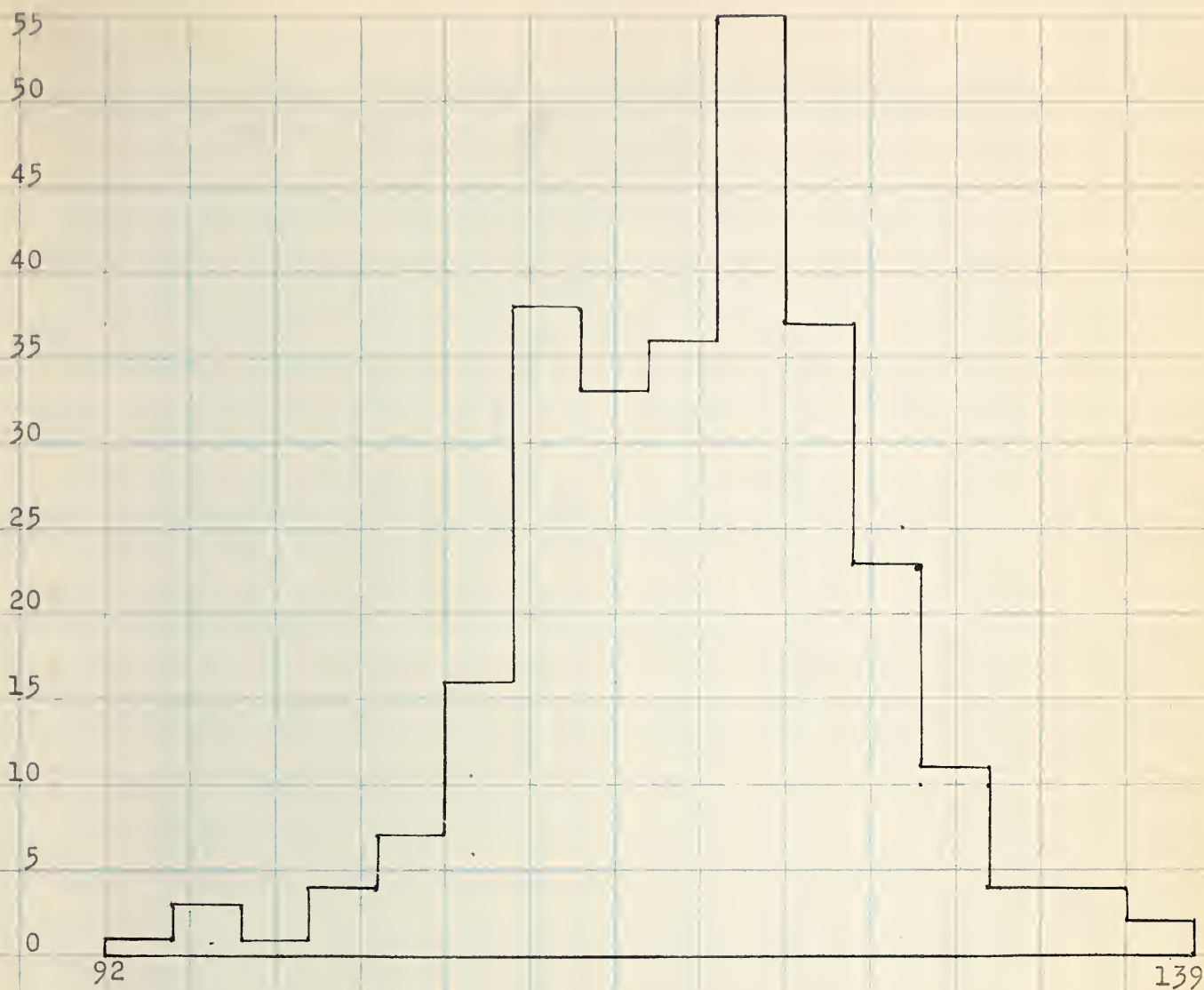
Figure 8. - Graph of Median Scores

the experimental group fell below the median of the standardization group on the reading rate test as compared to 70 per cent on the comprehension test. On the average, on the sub-tests used in this study, 64.1 per cent of the experimental group fell below the median of the standardization group.

TABLE V

COMPARATIVE SUMMARY OF DATA DERIVED
FROM THE IOWA SILENT READING TEST

TEST NUM- BER	SKILL MEASURED	MEDIAN OF STANDARDIZA- TION GROUP	MEDIAN OF EXPERIMEN- TAL GROUP	% OF EXPERI- MENTAL GROUP WHOSE SCORES FALL BELOW MEDIAN OF STANDARDIZA- TION GROUP
1A	Reading Rate	168.4	177.6	30% (approx.)
1B	Reading Compre- hension	185.3	167.5	70% (approx.)
2	Directed Reading	180.6	160.5	74% (approx.)
4	Word Meaning	190.4	182.9	69.3%(approx.)
5	Sentence Meaning	190.4	190.4	50%
6	Paragraph Compre- hension	180	177.5	51.8%(approx.)
7A	Use of Index	182.1	170.5	82% (approx.)
7B	Selection of Key Words	178.6	177.8	51.6%(approx.)
	Total Score	181.1	177.6	63.5%(approx.)



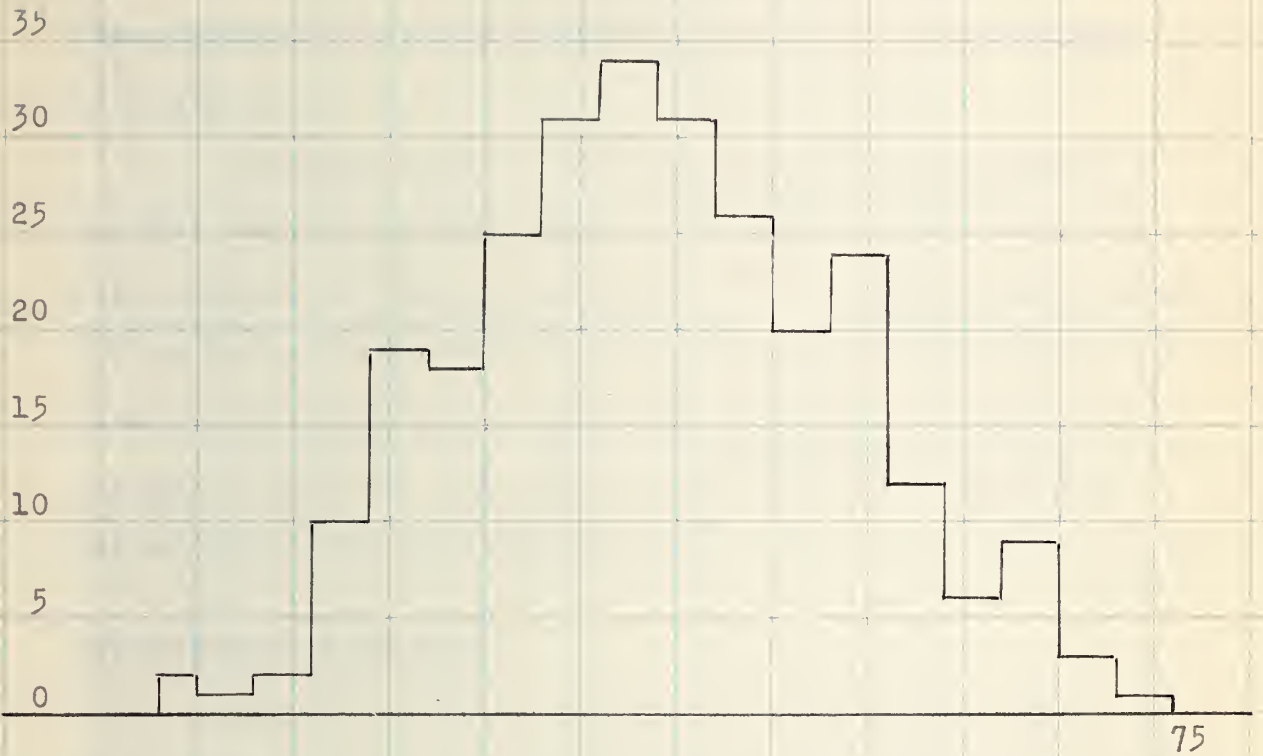
Number of Students - 274

Range of IQ's 92 - 139

Median Score - 118.1

Mean Score - 118

Figure 9. - Frequency Curve of distribution of IQ's from the Vocational Guidance Centre Intelligence Test.



Number of Students - 274

Possible range of scores 0 - 75

Actual range of scores 18 - 69

Median Score - 45.5

Mean Score - 44.2

Figure 10. - Frequency Curve of distribution of Social Studies Test Scores.

A good distribution was obtained on the Intelligence Test. Scores ranged from 92 to 139, with a median score of 118.1 and a mean score of 118. Two hundred of the 274 members of the experimental group fell between 110 and 126.

Results of the Social Studies test approached a normal curve of distribution even more closely than did the results of the intelligence test. Scores ranged from 18 to 69 in a possible range of 0 to 75. Two hundred of the 274 comprising the experimental group had scores between 33 and 55. The median score was 45.5 while the mean score for the group was 44.2

Statistical Procedure:

Scores obtained on the Test of Mental Ability and sub-test and total scores from the Silent Reading Test were correlated with scores obtained from the Social Studies test by the Pearson Product-Moment method. (1)

Fisher's test of significance (2) was then applied to the various correlation coefficients, using the formula

$$t = \frac{r \sqrt{n-2}}{\sqrt{1-r^2}}$$

where $n = 274$ and $r =$ the various correlation coefficients.

¹ E. F. Lindquist: "A First Course in Statistics." Houghton-Mifflin Co., 1938. Riverside Press, Cambridge, Mass. Chapter X, pp. 137-187.

² Iowa Silent Reading Tests, New Edition, Advanced Test: Form Am. pp. 2-3.

TABLE VI

PROBABILITY

Degrees of Freedom (n-1)	0.02	0.01
200	t = 2.35	t = 2.60
300	t = 2.34	t = 2.59

Extract from Table 29, p. 190.
Garrett "Statistics in Psychology and Education."

Table VII summarizes the results of the statistical procedure followed in this investigation, that is, the coefficients of correlation between all the variables and the social studies test, together with the results of the application of the test of significance to the correlation coefficients. Relationships ranging from .154 between Reading Comprehension and Social Studies, to .423 between Intelligence and Social Studies, were found to exist. The relation between reading comprehension and mastery of social studies was found to be significant at the 2 per cent level, while all the rest of the relationships are significant at the 1 per cent level. In other words, a positive, although low, correlation was found to exist between intelligence and reading skills on the one hand and knowledge of social studies on the other, significant in all cases but one at the 1 per cent level.

TABLE VII

SUMMARY OF RESULTS OF THE INVESTIGATION

VARIABLE	CORRELATION COEFFICIENT	NUMERICAL VALUE OF t WHEN $t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$	SIGNIFICANCE
I.Q.	.423	7.699	Significant at .01 level
Reading Rate	.194	12.443	Significant at .01 level
Reading Comprehension	.154	2.57	Significant at .02 level
Directed Reading	.195	3.26	Significant at .01 level
Word Meaning	.245	4.16	Significant at .01 level
Sentence Meaning	.3	5.208	Significant at .01 level
Paragraph Comprehension	.3142	5.47	Significant at .01 level
Use of Index	.175	2.9	Significant at .01 level
Selection of Key Words	.238	4.04	Significant at .01 level
Total Score	.264	4.51	Significant at .01 level

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- Iowa Silent Reading Tests, New Edition, Advanced Test:
Form Am. pp. 2-3.

CHAPTER V

CONCLUSIONS

1. The results of this investigation indicate that there are low but positive correlations between reading skills, as measured by the Iowa Silent Reading Test, and knowledge of social studies, as measured by the Social Studies Concepts test, ranging from .154 to .314, with a correlation of .264 between the total reading score and the social studies score.
2. The results indicate that the intelligence factor is more closely related to knowledge of social studies than are the reading skills, the correlation between intelligence, as measured by the Vocational Guidance Center Intelligence Indicator, and knowledge of social studies, as measured by the Social Studies Concepts Test, being .423.

In this regard it seems quite possible that such methods as the lecture, class discussion, and committee work are more widely used or are more efficient in obtaining knowledge of social studies than is reading, at least within the range of reading abilities possessed by members of the experimental group. It may be that other aspects of the Social Studies curriculum receive

greater emphasis than do the concepts measured in this investigation -- aspects which lend themselves to greater integration in the daily lives of the students. It also seems possible that other personal qualities and attainments such as strong motivation for studying, powers of concentration and perseverance, and so on, may influence in various ways the scholastic success of the students to a greater degree than do reading abilities and mental abilities, within the range of these abilities possessed by the members of the experimental group.

3. Results of the reading test indicate that, on the whole, the members of the experimental group are somewhat deficient in reading ability. This was particularly evident in the scores on the tests of Reading Comprehension, Directed Reading, Word Meaning, and Use of Index.
4. To the degree that the members of the experimental group are representative of Alberta high school graduates, and in the light of the limited evidence obtained from one reading test, it appears that the development of reading skills is being seriously neglected. Further research into the reading abilities of Alberta high

school students is needed to validate or disprove these findings. If these findings are validated there is an urgent need for remedial action.

Test of Social Studies Concepts.

On the answer sheet provided, indicate your answers to the following questions.

1. The Atlantic Charter can best be described as a
 - (1) Treaty of Peace
 - (2) statement of goals
 - (3) code of international law
 - (4) military pact between Britain and the United States.
2. Which of these is the most serious obstacle to friendship between Russia and the United States at the present time ?
 - (1) Russia no longer needs to buy American goods.
 - (2) The arrest of Russian spies in the U.S.
 - (3) The people of the two countries lack accurate information about each other.
 - (4) The two countries have a traditional record of unfriendly relations.
3. Of the following, which was the most important factor in bringing the United States into the first World War ?
 - (1) The German violation of Belgian neutrality.
 - (2) The expectation of territorial gain.
 - (3) The secret alliances and agreements with the Allied Powers.
 - (4) Germany's disregard for the rights of neutral powers.
4. What was the most important cause of China's remaining isolated for centuries ?
 - (1) The mountainous and desert regions along the frontiers.
 - (2) The Great Wall.
 - (3) The hostility of the Japanese.
 - (4) The military might of China.
5. The Concert of Europe succeeded in
 - (1) preserving peace for a generation
 - (2) making Turkey an Asiatic Power
 - (3) putting down a revolution in the Spanish colonies
 - (4) abolishing autocracy without recourse to war.
6. A regional bloc may be regarded as a half-way step from nationalism towards
 - (1) democracy
 - (2) economic self-sufficiency
 - (3) a world state
 - (4) world peace.

2.

7. Which of the following countries was the last to develop into a national state ?
- (1) England.
 - (2) France.
 - (3) Germany.
 - (4) Spain.
8. In spite of political disunion, some feeling of unity was possible among the ancient Greeks because of
- (1) favorable geographic conditions
 - (2) the use of a common language
 - (3) an alliance among the different city-states
 - (4) religious toleration.
9. The source of laws in pre-revolutionary France was the
- (1) people.
 - (2) Estates-General.
 - (3) Convention.
 - (4) King.
10. William III. ascension to the throne changed the position and power of all succeeding English sovereigns because he
- (1) became King on Parliament's invitation
 - (2) inherited the throne
 - (3) was nominated by the Pope
 - (4) conquered England in war.
11. The British Commonwealth of Nations may be described as a
- (1) confederation of dominions represented in the Parliament in London
 - (2) group of states enjoying local autonomy but bound by British foreign policy
 - (3) union of free and equal states
 - (4) recent attempt to form an organization of English-speaking peoples.
12. One of the causes of the Protestant Reformation was
- (1) the masses had learned to read the Bible
 - (2) Charles V oppressed the German Lutherans
 - (3) the Jesuits antagonized many wealthy noblemen
 - (4) the humanists challenged many church doctrines.
13. The feudal relationship between lord and vassal involved
- (1) no obligations on the part of the lord
 - (2) no obligations of the part of the vassal
 - (3) placing all responsibility on the vassal
 - (4) mutual obligations for vassal and lord.

14. During the early Middle Ages the monks made their most important contribution to civilization by
- (1) preserving copies of classical literary works
 - (2) perfecting the inductive method of reasoning
 - (3) introducing the practice of painting on canvas
 - (4) spreading Christianity throughout Asia.
15. Which of the following represents the first stage in the development of the art of writing?
- (1) Picture writing
 - (2) Cuneiform writing
 - (3) Use of ideographs
 - (4) Word writing.
16. An Order-in-Council is
- (1) a law enacted by the Senate alone
 - (2) a piece of legislation requiring the agreement of the cabinet only
 - (3) a bill put forward by a private member and endorsed by the legislature
 - (4) a bill introduced by a combined council of the legislature and cabinet.
17. Which is not characteristic of the present political system in Russia?
- (1) Popular elections for members of the local soviets.
 - (2) Parties advocating different types of political programs.
 - (3) Use of the secret ballot.
 - (4) A written constitution.
18. Which factor has become increasingly important in strengthening the ties binding Canada to the Mother Country?
- (1) Representation of Canada in the British Parliament.
 - (2) Mutual trade agreements and preferences.
 - (3) The power of the King to appoint Canadian officials.
 - (4) Mutual cancellation of war debts.
19. After the first World War, France demanded heavy reparations from Germany because
- (1) England insisted that this be done.
 - (2) France feared a powerful Germany would undertake a war of revenge.
 - (3) She had promised the U.S. to pay her war debts out of reparation payments.
 - (4) She lacked an adequate gold reserve.
20. The Charter of the U.N. assigns the responsibility for the prevention of future acts of aggression to the
- (1) Assembly
 - (2) Security Council
 - (3) International Court
 - (4) Economic and Social Council.

4.

21. During World War II there was a tendency in Canada towards

- (1) centralization of power
- (2) decentralization of power
- (3) separation of power as in the American constitution
- (4) curbing the power of the executive.

22. What types of class differences are strongest in Russia today ?

- (1) those based on birth
- (2) those based on wealth
- (3) those based on party membership
- (4) those based on religious affiliation.

23. In which country do the citizens have the most voice in the government ?

- (1) Russia.
- (2) China.
- (3) Sweden.
- (4) Argentina.

24. Why did Churchill give up his position as Prime Minister of Great Britain in 1945 ?

- (1) His policies were repudiated by the House of Commons.
- (2) The King asked for his resignation.
- (3) His party lost control of the House of Commons in a general election.
- (4) His term of office had expired.

25. The policies of the Labor government in Britain differ markedly from those of the Conservative government in relation to

- (1) the production of basic goods.
- (2) the operation of the parliamentary system.
- (3) the organization of the British Empire.
- (4) the maintenance of international security.

26. Which was the most serious single obstacle to the solution of the problem of Indian independence ?

- (1) Britain's unwillingness to make any concessions to the Indian nationals.
- (2) Ghandi's policy of armed resistance.
- (3) Inability of Indian groups to reconcile their differences.
- (4) Dependence of India upon imports from Britain.

27. In 1949 the typical family income in Canada was closest to

- (1) \$ 1,000
- (2) \$ 2,100
- (3) \$ 2,800
- (4) \$ 4,000.

28. True democracy is best gained by

- (1) laws that grant equality to all individuals.
- (2) the limitation of law-making to as few laws as possible.
- (3) the education of citizens to the necessity of responsibility and justice in all group relations.
- (4) the abolition of all forms of local government in favor of one central government.

29. Which of these countries in 1949 had a government least representative of popular will ?

- (1) Italy.
- (2) Norway.
- (3) Belgium.
- (4) Spain.

30. The only effective check on the authority of the British Parliament at present is

- (1) an adverse vote in a general election
- (2) a court decision involving a question of constitutionality
- (3) the veto power of the King
- (4) the opposition of the cabinet.

31. The aim of his government was to redistribute wealth by nationalizing basic industries.

- (1) Chamberlain.
- (2) Lloyd George.
- (3) Attlee.
- (4) Churchill.
- (5) Baldwin.

6.

32. Who shared with Thomas Masaryk a leading part in the development of Czechoslovakia?
1. Benes
 2. Bratianu
 3. Horthy
 4. Kemal
 5. Molotov.
33. Responsible government was first put into practice in Canada by
1. Sir Guy Carleton
 2. Lord Sydenham
 3. Lord Elgin
 4. Sir John A. Macdonald
 5. W.L. McKenzie King.
34. Who enlisted the aid of Germany and Italy in overthrowing the republican government of his country
1. Schusnigg
 2. Molotov
 3. Franco
 4. Petain
 5. Benes
35. The leader of the Bolshevik Revolution in 1917 was
1. Rasputin
 2. Stalin
 3. Zhukov
 4. Lenin
 5. Karl Marx

7.

36. One of the reasons for the workingmen's revolt of 1848, in France, was a spreading of the ideas of:
1. socialism
 2. imperialism
 3. fascism
 4. nationalism
 5. nazism.
37. An association formed for the purpose of changing conditions imposed by the treaties closing World War I was the
1. United Nations
 2. Rome-Berlin axis
 3. Little Entente
 4. British Commonwealth of Nations
 5. U.S.S.R.
38. One evil effect of the mercantile system was that it
1. encouraged a selfish nationalism
 2. resulted in free trade
 3. caused higher duties on exports
 4. led to the substitution of barter for money exchange.
39. Which of the following has operated generally to reduce prices on commodities?
1. Guild system
 2. Investment banking
 3. Mass production
 4. Protective tariffs
 5. Social Insurance.
40. The principal reason why the Industrial Revolution began in England was that England had
1. developed the most influential craft guilds.
 2. more wealth than other European countries.
 3. enjoyed a long period of peace.
 4. the necessary capital, labor and raw materials.
41. Which of the following set aside all treaties restricting their right to armaments?
1. Boers
 2. Communists
 3. Fascists
 4. Moors
 5. Nazis

8.

42. The alliance with the Thirteen Colonies was significant to France chiefly because she
1. regained possession of Louisiana
 2. gained American help against a European coalition
 3. was thus able to strike a blow at Britain
 4. regained her lost colonies in India.
43. The nation whose show of force in 1853 secured the first opening of Japanese ports to foreign trade was
1. Britain
 2. France
 3. China
 4. U.S.A.
 5. Germany
44. Mussolini's solution for the problem of coordinating the economic and political life of Italy was
1. Communism
 2. the corporate state
 3. the Second Reich
 4. the Third Republic
 5. Anschluss
45. One of the causes of the First World War was
1. the sinking of the Lusitania.
 2. Germany's invasion of Russia.
 3. Serbia's refusal to accept arbitration of her quarrel with Austria.
 4. Austria's insistence on the complete acceptance of her demands on Serbia.
46. The 18th century government of England was dominated by the aristocracy because
1. England was still a divine-right monarchy.
 2. the franchise was restricted to a few.
 3. the House of Commons had no power.
 4. the King had no veto over parliament.
47. From 1939 to 1941 the United States' attitude to the Second World War was
1. armed help
 2. isolation
 3. all help short of war
 4. full participation in all war theatres.

9.

48. Russia has consistently tried to secure an all-year outlet to the ocean by way of the
1. Black Sea
 2. Baltic Sea
 3. Gulf of Riga
 4. Caspian Sea
 5. North Sea
49. A city on the Strait of Bosphorus at the entrance to the Black Sea is
1. Paris
 2. Venice
 3. Constantinople
 4. Hamburg
 5. Antwerp
50. The city situated on the Seine river in northern France is
1. Venice
 2. Antwerp
 3. Marseilles
 4. Bagdad
 5. Paris
51. An inexhaustible source of Canadian power is that of
1. coal
 2. uranium
 3. gas
 4. oil
 5. hydro-electricity
52. The Caribbean Sea is east of
1. India
 2. Mexico
 3. Spain
 4. Bulgaria
 5. Italy
53. Canadian production exceeds that of any other country in the world in
1. wheat
 2. newsprint
 3. gold
 4. oil
 5. iron

10.

54. This country borders both the Mediterranean and the Red Sea

1. Afghanistan
2. Egypt
3. Ethiopia
4. Iraq
5. Arabia.

55. The chief commercial highway between the Mediterranean peoples and the Far East is through the

1. Strait of Gibraltar
2. Red Sea
3. Strait of Dover
4. Dardanelles
5. Baltic Sea.

56. The East Indies are immediately east of

1. India
2. Mexico
3. Africa
4. Australia
5. Japan.

57. The body of water separating Norway and Scotland is the

1. Black Sea
2. Baltic Sea
3. Aegean Sea
4. Adriatic Sea
5. North Sea.

58. The largest exporter of oil and asphalt is

1. Union of South Africa
2. India
3. Burma
4. Ceylon
5. Trinidad.

59. Constantinople is on the

1. Adriatic Sea
2. Strait of Bosphorus
3. Euphrates River
4. Bay of Biscay
5. Strait of Gibraltar.

60. The shortest commercial air route between New York and London will be likely to schedule stops at

1. Newfoundland
2. Alaska
3. Iceland
4. Bermuda
5. Hawaii.

11.

61. The buffer state between Germany and Russia is

1. Finland
2. Hungary
3. Latvia
4. Poland
5. Rumania

62. Exports of Czechoslovakia, Austria, Hungary and Rumania are transported down this river

1. Danube
2. Dnieper
3. Elbe
4. Rhine
5. Vistula

63. The late Crusading age was in which century?

1. 13th century
2. 14th century
3. 15th century
4. 16th century
5. 17th century.

64. Which event occurred first?

1. French Revolution
2. Discovery of America
3. The Crusades
4. Defeat of the spanish Armada
5. Crimean War.

65. Germany lost her colonial empire

1. before 1750
2. between 1750 and 1800
3. between 1800 and 1850
4. between 1850 and 1900
5. since 1900

66. The National Socialist regime in Germany was destroyed

1. before 1871
2. between 1871 and 1885
3. between 1885 and 1918
4. between 1918 and 1939
5. since 1939.

67. The countries of Western Europe were in which stage of economic development at the close of the Middle Ages?
1. Industrial
 2. Handicraft
 3. Agricultural
 4. Pastoral
68. Queen Victoria reigned in which century?
1. 15th century
 2. 16th century
 3. 17th century
 4. 18th century
 5. 19th century
69. Which event occurred first?
1. British North America Act
 2. American Revolution
 3. Boer War
 4. Bolshevik Revolution
 5. Congress of Vienna
70. The 1st (Great) Reform Bill was passed in England
1. before 1750
 2. between 1750 and 1800
 3. between 1800 and 1850
 4. between 1850 and 1900
 5. since 1900
71. Which people had met with most success in establishing a colonial empire in the New World by the middle of the 16th century?
1. English
 2. French
 3. Portuguese
 4. Spanish
72. Which was earliest in point of time?
1. Discovery of fire.
 2. Use of metals.
 3. Picture writing.
 4. Domestication of the horse.
 5. Manufacture of clay pottery.

13.

73. Which event occurred last?

1. British North America Act.
2. American Revolution.
3. Boer War.
4. Bolshevik Revolution.
5. Congress of Vienna.

74. The rule of the Tsars in Russia was overthrown

1. before 1871
2. between 1871 and 1900
3. between 1900 and 1918
4. between 1918 and 1939
5. since 1939

75. Western democracies failed to keep the peace by "appeasing" aggressor nations

1. before 1871
2. between 1871 and 1885
3. between 1885 and 1918
4. between 1918 and 1939
5. since 1939.

APPENDIX B

Raw data resultant from the testing program used in this study.

Legend.

- A - I.Q. - I.Q. from V.G.C. Intelligence Indicator.
- B - R.R.S. - Reading Rate Score.
- C - R.C.S. - Reading Comprehension Score.
- D - D.R.S. - Directed Reading Score.
- E - P.C.S. - Poetry Comprehension Score.
- F - W.M.S. - Word Meaning Score.
- G - S.M.S. - Sentence Meaning Score.
- H - Para.C.S. - Paragraph Comprehension Score
- I - U.I.S. - Use of Index Score.
- J - S.K.W.S. - Selection of Key Words Score.
- K - S.S.C.S. - Social Studies Concepts Score.

Student Number	A I.Q.	B R.R.S.	C R.C.S.	D D.R.S.	E P.C.S.	F W.M.S.	G S.M.S.	H Para. C.S.	I U.I.S.	J S.K.W.S.	K S.S.C.S.
1	127	202	168	179	201	217	234	195	181	189	59
2	135	211	190	208	208	222	229	215	202	198	54
3	135	202	171	193	187	218	226	208	193	222	50
4	130	175	171	164	215	195	209	208	181	210	59
5	122	187	196	183	208	192	193	208	181	198	38
6	124	199	190	188	201	222	203	195	181	198	62
7	120	160	151	154	177	183	196	173	169	180	48
8	122	187	171	174	177	203	198	181	187	198	56
9	126	192	196	193	208	217	214	201	193	198	59
10	128	187	178	154	177	197	184	195	181	210	59
11	114	187	203	179	187	193	177	190	187	184	47
12	122	187	168	179	201	188	206	201	164	180	46
13	128	206	212	174	208	207	196	196	213	189	67
14	110	178	168	183	187	208	198	173	175	180	48
15	128	175	165	164	187	195	212	215	169	184	51
16	135	220	187	204	208	215	231	195	213	198	69
17	127	169	187	169	191	218	214	208	193	165	55
18	123	144	154	164	157	176	173	173	169	173	56
19	121	178	154	174	187	207	220	173	169	198	62
20	139	202	161	188	215	200	223	201	213	198	64
21	133	181	158	183	215	185	209	190	181	189	63
22	120	175	178	179	168	208	203	190	187	180	47
23	128	213	171	149	196	215	198	208	169	210	64
24	117	160	151	169	168	198	191	201	193	184	60
25	126	175	168	188	181	195	214	181	193	184	48
26	110	175	203	179	191	180	196	201	187	189	63
27	122	163	158	159	157	183	179	173	143	173	63
28	122	199	181	179	184	213	217	195	185	184	47
29	112	181	144	164	173	195	193	177	175	189	41
30	135	189	199	164	215	200	234	215	181	184	58
31	119	184	178	135	215	195	203	201	175	189	58
32	126	175	171	188	215	205	206	220	187	173	54
33	110	163	135	164	146	169	156	166	164	165	18
34	116	175	140	169	184	195	173	177	193	198	33
35	116	204	165	169	168	200	212	190	189	187	37
36	118	178	168	149	181	183	214	190	169	198	33
37	120	172	181	174	196	208	196	201	175	198	34
38	115	175	161	174	187	180	203	185	193	180	33
39	115	184	165	154	177	174	191	201	175	210	37
40	122	184	190	121	135	180	182	201	155	198	42
41	126	175	184	174	168	192	203	185	181	198	44
42	110	195	165	154	146	171	171	163	150	180	45
43	115	181	190	159	168	178	206	190	175	189	42
44	110	166	148	128	141	197	175	170	164	169	40
45	119	147	144	135	168	173	184	185	159	176	48
46	115	175	168	128	146	183	201	170	175	173	30

Student Number	A I.Q.	B R.R.S.	C R.C.S.	D D.R.S.	E P.C.S.	F W.M.S.	G S.M.S.	Para. H J.S.	I U.I.S.	J S.K.W.S.	K S.S.C.S.
47	117	209	171	154	163	180	209	190	155	165	54
48	122	202	184	149	135	193	209	173	150	128	56
49	121	166	154	159	181	195	191	163	175	180	53
50	121	172	171	135	141	200	203	195	159	165	59
51	111	184	196	179	201	185	201	195	169	180	53
52	120	172	168	169	163	168	182	160	159	184	46
53	126	175	207	179	208	190	203	190	202	198	41
54	114	192	190	179	168	190	189	185	187	184	43
55	106	130	158	164	157	174	175	173	155	176	37
56	119	163	165	128	168	185	189	173	155	156	30
57	122	157	165	179	187	183	167	166	143	176	33
58	116	192	165	149	157	156	175	163	164	198	43
59	110	195	171	142	177	173	177	185	169	198	53
60	119	157	165	135	135	178	191	181	127	210	54
61	115	175	158	154	146	178	175	163	155	165	47
62	112	189	158	154	146	174	201	190	175	184	42
63	109	157	165	154	168	176	169	170	155	169	40
64	114	178	193	154	163	178	184	157	150	184	40
65	122	178	190	128	141	181	191	185	159	189	40
66	115	178	171	149	173	169	175	181	159	189	47
67	114	181	158	169	173	185	198	173	164	184	55
68	118	184	175	183	215	192	203	230	175	169	27
69	110	187	161	169	181	190	191	170	159	210	46
70	120	195	181	164	173	183	198	195	150	210	34
71	112	157	130	159	173	174	169	163	164	156	42
72	111	189	151	164	173	183	191	177	187	173	33
73	110	192	140	164	163	171	184	170	155	184	40
74	95	160	165	142	168	174	184	132	150	153	38
75	119	189	161	193	184	183	177	201	181	189	35
76	115	169	151	154	184	164	184	181	187	180	32
77	130	181	187	179	201	174	201	215	181	176	65
78	126	184	154	169	191	183	209	195	159	184	54
79	122	181	187	159	196	187	198	201	187	176	45
80	112	175	154	183	173	176	201	177	169	173	30
81	115	189	154	164	168	185	196	190	175	176	43
82	92	141	148	135	181	166	189	163	135	153	53
83	112	187	181	154	177	190	179	173	175	169	48
84	117	195	168	164	163	188	196	185	150	198	55
85	112	175	184	128	181	180	206	181	164	189	47
86	120	178	178	174	187	176	167	185	181	184	48
87	111	184	178	154	152	180	186	190	169	189	47
88	127	184	193	183	208	208	226	195	187	210	59
89	119	147	165	164	191	208	191	190	193	184	53
90	114	163	144	142	157	176	201	177	164	184	41
91	125	178	178	174	191	188	206	185	202	210	45
92	111	197	171	142	181	178	164	177	213	180	31

Student Number	A I.Q.	B R.R.S.	C R.C.S.	D D.R.S.	E P.U.S.	F W.M.S.	G S.M.S.	Para. H.C.S.	H U.I.S.	J S.K.W.S.	K S.S.C.S.
93	124	204	203	179	215	220	231	195	187	210	55
94	103	163	175	179	184	192	182	166	169	173	50
95	114	199	144	149	187	183	203	153	169	173	31
96	117	169	181	174	191	173	177	170	175	176	41
97	119	189	193	188	208	193	220	181	175	180	47
98	128	209	181	142	201	195	201	208	169	210	61
99	119	151	175	164	168	185	209	170	175	161	52
100	112	166	171	142	163	169	201	157	164	165	35
101	108	147	148	149	168	162	179	166	155	173	38
102	113	169	148	169	196	174	186	170	164	176	39
103	117	175	184	149	177	181	184	157	175	176	47
104	115	178	181	164	173	190	179	166	189	181	40
105	120	189	171	164	152	187	182	215	169	176	54
106	118	175	151	135	168	185	191	173	187	173	39
107	113	147	154	159	157	169	173	170	169	165	39
108	120	184	154	179	184	193	193	185	181	198	55
109	139	178	190	128	173	207	214	181	202	189	67
110	103	184	144	142	152	174	189	144	150	173	29
111	120	199	190	174	191	185	209	208	164	184	37
112	120	189	165	169	168	185	184	201	187	189	49
113	111	172	148	159	191	180	189	163	164	176	35
114	114	181	148	179	168	180	184	170	143	169	32
115	123	189	193	142	157	180	223	195	175	184	46
116	110	197	161	149	152	188	198	166	143	180	52
117	115	197	158	159	119	202	214	195	181	198	39
118	109	169	144	164	152	171	156	157	150	173	40
119	110	172	135	149	163	169	175	153	164	173	32
120	110	184	148	174	168	168	173	181	159	198	43
121	121	166	158	159	173	171	165	163	155	169	53
122	117	197	168	159	177	193	175	170	155	198	29
123	105	157	148	149	152	174	167	153	164	173	32
124	119	189	196	197	173	202	193	201	187	169	42
125	118	166	181	197	181	197	182	190	155	198	64
126	98	169	151	149	173	174	179	150	143	173	38
127	125	204	175	159	177	181	212	208	193	176	61
128	114	151	178	188	191	192 ^b	173	195	187	189	40
129	116	163	168	159	168	174	179	166	159	173	44
130	123	172	161	159	177	193	186	185	213	189	28
131	121	184	175	159	146	190	184	190	169	198	50
132	115	166	184	121	177	197	189	170	181	184	58
133	118	166	178	164	173	176	182	208	175	189	43
134	121	166	184	179	152	195	209	195	169	189	50
135	125	169	168	179	173	183	177	177	159	222	60
136	106	163	135	149	135	168	179	150	155	145	38
137	123	218	171	154	163	212	220	201	193	173	46
138	124	166	148	135	177	181	184	147	169	189	39

Student Number	I.Q. A	R.R.S. B	R.U.S. C	D.R.S. D	P.C.S. E	W.M.S. F	S.M.S. G	Para. H U.S.	U.I.S. I	S.K.W.S. J	S.S.C.S. K
139	115	227	161	174	177	187	184	173	175	184	54
140	107	187	184	174	201	188	182	201	187	180	30
141	124	172	158	193	168	197	184	173	175	198	43
142	112	175	151	164	173	176	198	185	150	189	37
143	117	151	140	142	146	169	184	166	150	165	38
144	111	181	168	159	152	183	175	160	169	184	46
145	111	192	161	179	177	190	184	173	159	169	46
146	127	187	190	169	163	195	198	201	181	210	44
147	121	154	158	169	173	180	193	166	181	222	54
148	114	184	154	201	168	178	169	170	181	180	18
149	118	184	178	159	191	192	162	177	155	184	37
150	104	195	171	164	173	198	220	195	135	161	45
151	125	169	165	179	163	188	184	181	175	222	47
152	110	181	187	154	196	185	201	185	159	173	36
153	119	175	140	164	157	162	182	173	181	180	33
154	132	169	187	174	184	187	198	215	175	180	58
155	125	144	184	183	201	197	229	201	187	198	40
156	117	181	178	174	173	178	196	201	164	173	42
157	105	175	148	128	135	178	173	157	127	210	34
158	124	178	193	169	173	198	212	201	187	180	54
159	116	172	165	169	163	180	196	185	175	180	44
160	109	166	168	164	152	162	177	160	150	176	51
161	130	195	199	188	208	215	226	208	187	173	51
162	113	181	140	142	163	181	201	173	155	176	31
163	117	192	190	197	196	198	191	173	187	189	55
164	119	195	178	135	152	180	189	163	159	198	36
165	119	184	158	121	196	190	191	195	181	173	34
166	119	184	161	183	177	181	189	201	187	198	48
167	122	192	168	174	177	200	201	215	169	210	48
168	116	192	165	121	125	181	191	163	150	184	26
169	109	166	175	188	181	183	203	195	181	189	41
170	119	197	161	183	163	198	186	181	169	198	51
171	124	166	190	169	157	192	193	190	175	176	55
172	108	181	203	142	163	174	191	177	169	173	36
173	124	166	165	183	187	187	186	181	164	153	45
174	112	154	161	154	135	166	164	147	155	165	41
175	123	181	171	164	201	200	206	190	213	210	53
176	118	178	165	179	184	188	191	190	175	184	39
177	119	184	144	159	168	193	206	201	159	180	25
178	124	209	217	159	191	188	217	181	181	210	65
179	125	181	171	164	196	187	201	190	187	189	47
180	110	175	165	159	157	181	186	166	164	169	38
181	115	172	161	135	173	180	189	181	159	180	54
182	125	172	181	164	208	183	195	190	164	173	49
183	116	181	158	169	168	190	201	201	159	176	32
184	109	154	135	164	141	166	164	160	164	169	38

Student Number	I.Q. A	R.R.S. B	R.C.S. C	D.R.S. D	P.C.S. E	W.M.S. F	S.M.S. G	Para. C.S. H	U.I.S. I	S.K.W.S. J	S.S.C.S. K
185	113	151	165	154	173	188	169	166	150	153	45
186	117	163	151	164	163	188	191	173	164	213	40
187	113	181	165	128	130	203	226	208	164	176	29
188	127	195	184	197	208	220	209	181	187	184	43
189	120	172	175	149	152	173	184	190	169	165	43
190	111	175	122	121	146	166	165	170	164	165	28
191	111	147	161	149	152	180	173	166	175	169	40
192	121	154	184	179	187	192	220	208	164	173	39
193	119	163	178	135	163	139	164	157	150	189	47
194	102	151	130	154	152	162	158	157	155	149	35
195	120	197	171	135	181	195	212	190	169	189	44
196	109	166	154	159	135	181	184	208	159	165	49
197	110	134	148	142	157	171	171	166	150	156	46
198	105	202	171	135	141	166	191	173	143	161	55
199	117	147	184	149	187	180	196	190	169	153	32
200	116	184	161	154	152	181	182	170	175	184	27
201	123	189	196	179	215	195	196	177	143	180	51
202	116	144	158	159	191	183	186	173	164	153	27
203	111	175	181	169	187	185	198	185	169	156	48
204	123	209	158	154	157	162	177	170	155	184	59
205	123	184	187	164	168	158	217	181	135	165	51
206	132	181	184	183	187	187	198	195	187	169	51
207	130	181	178	169	187	187	206	195	175	180	44
208	111	163	168	154	196	174	182	185	135	176	45
209	114	184	187	179	201	173	196	185	169	180	32
210	118	181	190	164	208	205	203	181	181	176	43
211	122	163	171	159	152	185	196	195	164	234	44
212	114	172	165	164	168	169	162	173	187	184	39
213	119	206	196	169	173	193	203	195	164	210	40
214	121	181	187	164	168	198	212	201	187	210	55
215	126	195	158	174	201	195	179	195	155	153	46
216	123	197	158	169	187	178	198	169	187	189	35
217	117	169	175	169	146	174	177	181	164	169	42
218	121	204	190	183	201	193	193	230	164	198	48
219	112	189	178	179	181	181	186	190	175	161	52
220	108	184	161	154	125	158	165	138	127	156	55
221	119	151	140	149	157	178	164	150	159	176	52
222	103	192	187	142	177	162	182	181	155	176	47
223	109	144	161	183	157	180	171	173	127	141	44
224	115	166	178	149	184	173	189	170	150	176	42
225	107	175	148	135	163	180	164	173	150	169	32
226	123	199	193	159	201	215	206	170	169	189	68
227	121	175	171	201	208	203	209	170	193	210	41
228	110	195	190	164	173	202	206	181	181	184	29
229	121	197	175	179	208	185	206	208	213	210	48

Student Number	I.C. A	R.R.S. B	R.C.S. C	D.R.S. D	P.C.S. E	W.M.S. F	S.M.S. G	Para. U.S. H	U.I.S. I	S.K.W.S. J	S.S.C.S. K
230	104	163	154	164	163	173	179	166	159	176	42
231	108	178	154	164	168	169	162	181	169	169	30
232	126	163	154	142	146	187	203	177	175	210	38
233	124	189	193	164	173	171	198	190	169	169	41
234	97	172	161	149	177	164	1731	163	164	156	45
235	120	197	171	154	191	183	201	173	143	149	32
236	126	197	187	188	196	195	223	190	164	210	36
237	108	141	148	159	163	173	158	132	159	145	43
238	117	169	168	164	163	187	196	170	150	161	50
239	107	163	165	142	177	160	162	144	155	169	37
240	97	154	126	128	119	177	169	135	159	156	21
241	122	184	154	154	177	181	201	173	169	153	35
242	124	154	181	121	157	183	186	177	175	210	50
243	119	137	184	159	163	181	184	185	164	189	49
244	119	187	171	121	163	181	179	166	159	184	42
245	119	172	158	179	177	173	189	173	155	180	39
246	117	166	165	154	168	169	173	177	164	169	29
247	118	187	151	154	177	176	214	185	164	176	48
248	133	184	207	193	187	207	206	195	187	180	59
249	119	172	148	149	146	181	171	177	193	153	37
250	110	184	181	164	157	187	201	157	155	189	41
251	130	154	148	154	157	183	201	201	169	189	49
252	130	213	184	197	208	212	214	195	202	184	38
253	120	184	161	169	173	183	193	181	155	169	50
254	117	172	151	154	187	171	182	160	159	165	34
255	119	178	187	179	208	178	196	195	181	169	53
256	125	130	165	149	168	166	175	160	155	153	46
257	125	157	158	174	196	198	189	166	175	161	37
258	123	160	184	169	187	181	177	195	159	176	64
259	112	197	178	164	173	181	177	190	135	169	33
260	119	187	154	154	177	163	182	173	169	189	52
261	114	175	196	193	181	203	196	170	187	189	31
262	121	181	148	164	191	187	196	190	181	210	43
263	120	189	168	154	201	202	196	185	175	198	43
264	124	181	171	201	184	198	201	190	181	169	42
265	122	187	161	164	163	180	189	177	164	141	44
266	108	209	135	174	163	166	182	166	169	189	49
267	114	160	165	169	157	185	175	166	155	198	32
268	116	181	175	149	184	174	177	160	164	165	38
269	120	166	171	164	163	188	191	163	169	180	55
270	121	189	165	174	168	202	206	177	169	184	42
271	122	184	190	179	181	176	189	220	175	173	50
272	115	166	175	179	146	187	186	173	175	169	41
273	119	195	184	174	191	192	186	185	202	210	42
274	117	199	158	169	163	176	177	163	181	180	38

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